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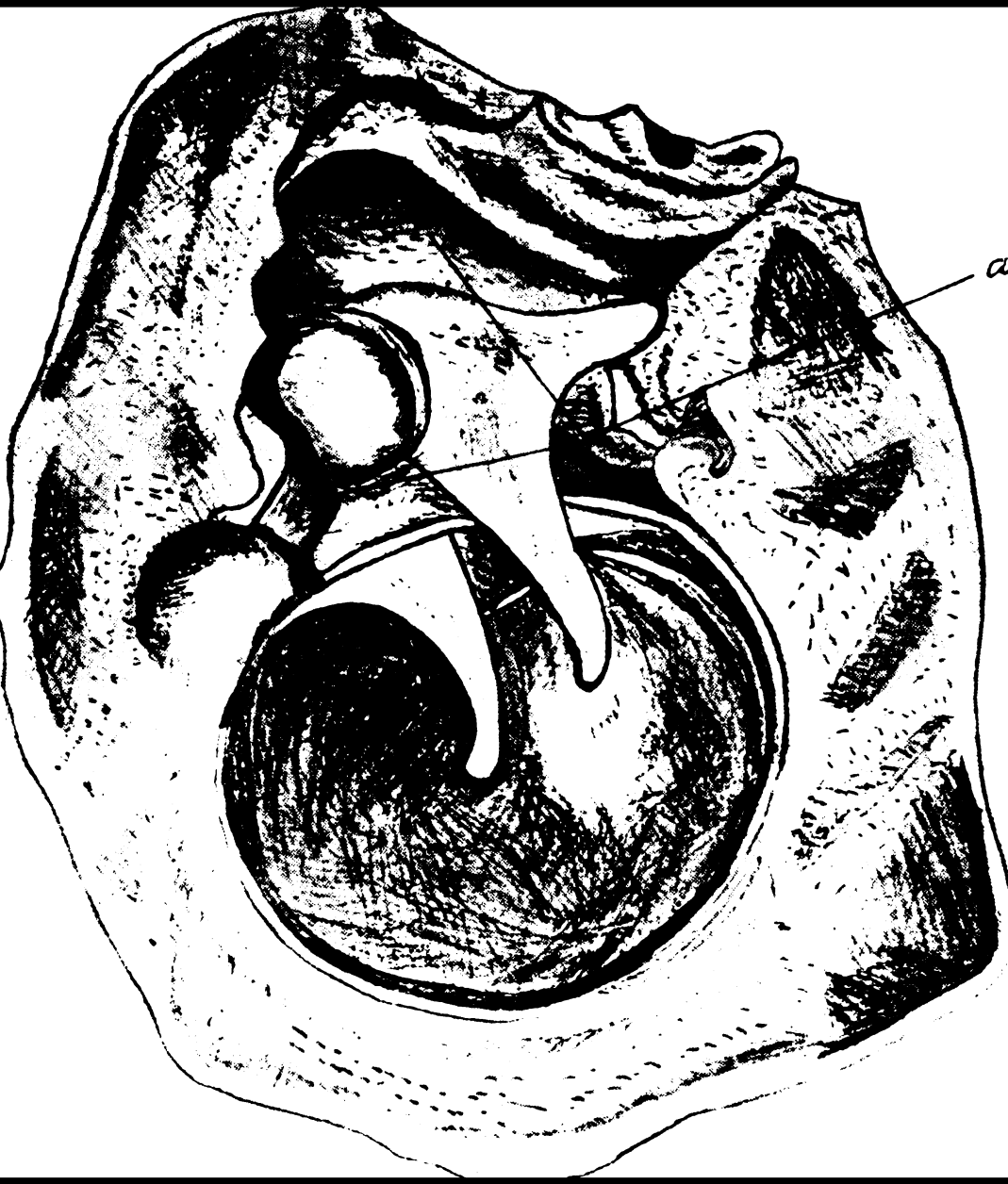

Transactions of the New Hampshire Medical Society ...

New-Hampshire Medical Society

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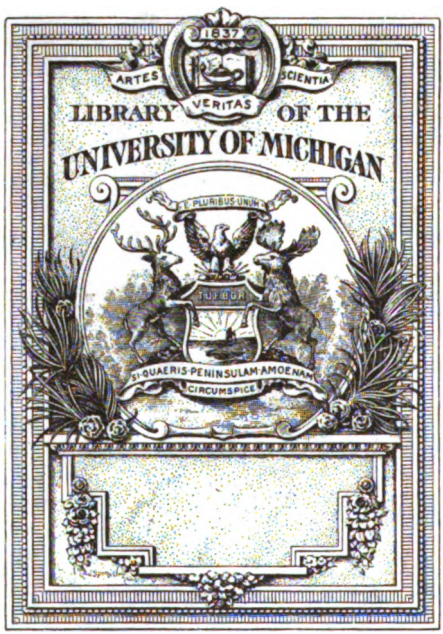

THE GIFT OF
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TRANSACTIONS

OF THE

New Hampshire Medical Society

AT THE

One Hundred and Eighteenth Anniversary

HELD AT

CONCORD, MAY 13 AND 14, 1909.

CONCORD, N. H.
THE RUMFORD PRINTING CO.
1909

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New Hampshire Medical Society.

OFFICERS FOR 1909–1910

PRESIDENT.

FRANK BLAISDELL, Goffstown.

VICE-PRESIDENT.

ALONZO S. WALLACE, Nashua.

SECRETARY.

D. E. SULLIVAN, Concord.

TREASURER.

D. M. CURRIER, Newport.

COUNCILORS.

Merrimack County..... C. R. WALKER.
Term expires 1910.

Hillsborough County..... JAMES T. GREELEY.
Term expires 1910.

Rockingham County..... A. W. MITCHELL.
Term expires 1911.

Strafford County..... FORREST L. KEAY.
Term expires 1911.

Coös County..... F. W. EVANS.
Term expires 1912.

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Carroll County.....JOHN Z. SHEDD.
Term expires 1912.

Belknap County.....A. H. HARRIMAN.
Term expires 1913.

Grafton County.....FREDERICK VON TOBEL.
Term expires 1913.

Cheshire County.....H. K. FAULKNER.
Term expires 1914.

Sullivan County.....E. M. FITCH.
Term expires 1914.

TRUSTEES.

JOHN W. PARSONS, Portsmouth, term expires 1910.
WILLIAM T. SMITH, Hanover, term expires 1911.
S. M. DINSMOOR, Keene, term expires 1912.

HOUSE OF DELEGATES.

Rockingham County. JOHN W. PARSONS, Portsmouth.
GEORGE H. GUPTIL, Raymond.

Belknap County.... FRANK B. EASTON, Laconia.
E. F. HOUGHTON, Tilton.

Cheshire County.... BAYARD T. MOUSLEY, Alstead.
JOHN D. PROCTOR, Keene.

Hillsborough County. N. F. CHEEVER, Greenfield.
FRANK E. KITTREDGE, Nashua.
GEORGE C. WILKINS, Manchester.

Strafford County... C. C. ROGERS, Farmington.
GEORGE A. TOLMAN, Dover.

Merrimack County.. SIBLEY G. MORRILL, Concord.
E. E. HILL, Suncook.

Coös County..... G. H. MORRISON, Whitefield.
J. J. COBB, Berlin.

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Grafton County.....WILLIAM T. SMITH, Hanover.
E. O. CROSSMAN, Lisbon.

Sullivan County....

Carroll County.....W. S. DAVIS, Sanbornville.
G. W. LOUGEE, Freedom.

BOARD OF MEDICAL EXAMINERS.

JAMES T. GREELEY, Nashua, term expires 1910.
ARTHUR C. HEFFENGER, Portsmouth, term expires 1911.
GEORGE COOK, Concord, term expires 1912.
GEORGE H. SHEDD, North Conway, term expires 1913.
JOHN F. ROBINSON, Manchester, term expires 1914.

DELEGATES.

To American Medical Association.

F. A. STILLINGS, Concord.

To Dartmouth Medical College.

A. C. HEFFENGER, Portsmouth.
E. O. CROSSMAN, Lisbon.

To State Societies.

Maine .....F. L. KEAY, Rochester.
J. H. NEAL, Portsmouth.
Massachusetts .....J. E. A. LANOUETTE, Manchester.
GEORGE W. LOUGEE, Freedom.
Vermont .....E. F. HOUGHTON, Tilton.
WM. A. MEGRATH, Loudon.
New York.....C. F. McGAHAN, Bethlehem.
GEO. H. MORRISON, Whitefield.
Rhode Island.....CHAS. R. WALKER, Concord.
E. T. DRAKE, Franklin.
Connecticut .....J. J. BERRY, Portsmouth.
J. G. W. KNOWLTON, Exeter.

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BOARD OF MEDICAL EXAMINERS.

JAMES T. GREELEY, Nashua.

Alternate.

WM. E. REED, Nashua.

NECROLOGIST.

E. E. GRAVES, Penacook.

ANNIVERSARY CHAIRMAN.

A. NOEL SMITH, Dover.

STANDING COMMITTEES.

Scientific Work.

D. E. SULLIVAN, Concord.
LOUIS W. FLANDERS, Dover.
JOHN M. GILE, Hanover.

Public Policy and Legislation.

JOHN M. GILE, Hanover.
JAMES T. GREELEY, Nashua.
F. A. STILLINGS, Concord.
President and Secretary, *ex-officio.*

Publication.

Secretary, President and Treasurer.

Arrangements.

Merrimack County Society.

SPECIAL COMMITTEES.

Affiliation.

GEORGE COOK, Concord.
CHARLES R. WALKER, Concord.
GEORGE C. WILKINS, Manchester.
WILLIAM T. SMITH, Hanover.
LOUIS W. FLANDERS, Dover.

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History of Medicine in New Hampshire.

I. A. WATSON, Concord.
WILLIAM CHILD, Piermont.
J. W. PARSONS, Portsmouth.
WILLIAM T. SMITH, Hanover.
G. P. CONN, Concord.

The next annual meeting of the Society will be held at Concord May 14 and 15, 1910.

All communications for the Society should be addressed to the Secretary, D. E. Sullivan, M. D., Concord.

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New Hampshire Medical Society.

PROCEEDINGS

OF THE

One Hundred and Eighteenth Anniversary.

MORNING SESSION, THURSDAY, May 13, 1909.

The members of the New Hampshire Medical Society convened in Memorial Hall, Concord, at 11 o'clock.

The President, John M. Gile, M. D., called the meeting to order and introduced the Chaplain, Rev. W. Stanley Emery, who invoked the divine blessing.

PRAYER OF REV. W. STANLEY EMERY.

O God, our Father, from whom cometh every good and perfect gift, may wisdom and knowledge, truth and understanding, guide the members of this association in the work before them. Bless the service of the doctors and surgeons of New Hampshire, which thou hast called and fitted them to do for their fellowmen. Keep simple and strong in them the faith of their fathers in Thee as the source of life, as the renewal of health, as the Supreme Physician of the bodies and minds and souls of all. May they so seek to know Thy will and those laws of nature which embody it that their skill and success may increase in healing the sick, in relieving the suffering, in restoring happiness to the miserable. May the joy of faith be theirs in the consciousness of their working with and for Thee in the past, the relations of the Kingdom of Heaven upon earth, the rule of God over the wills of men, so that they shall be-

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come sound in body, true in mind, pure in heart, clean in life. More and more may the vision grow among these, Thy servants, and their knowledge and skill and power apply to the study and removal of all conditions which breed weakness and ill health and wretchedness and sin. Use them as Thy mighty instruments for the prevention of disease and the ignorance so often leading to it. As they go in and out among their fellows, as they come close to family life in our homes, may their actions and conduct and the powerful influences streaming from their characters and personalities speak louder than words can do of the truth of life and its joy, and the strength of life and its peace, of the fullness of life and its usefulness, for these are blessings which Thou wouldst have all men enjoy. Give Thy richest blessing to those who gather here for fellowship and inspiration. Send them back to their posts of duty with larger visions of their responsibilities and opportunities of service in their communities, especially among the children in our homes and schools, where preventive work can best be done. We plead for pardon for all our shortcomings, for our failures to reach the fullness of the manhood and the ability which are ours. We thank Thee for all that Thou hast done for Thy servants in the past, for the good of these throughout this state, and now we lift up our hearts and thoughts to Thee for all Thy children everywhere, that Thou shalt supply all things which are needful for them as for us in time and eternity. In the name of Him who, when on earth, spoke as never man spoke, who went about doing good, who showed the measure of His love for man by laying down His life in generous, unselfish service, even unto death, who bore with man's infirmities and carried his sicknesses, who interposes His presence and power even here and now wherever those who do His will still find Him to be the physician of their bodies and their souls, who has taught us always when we pray to say: Our Father who art in Heaven, hallowed be

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Thy name, Thy Kingdom come, Thy will be done, on earth as it is in Heaven. Give us this day our daily bread, and forgive us our trespasses as we forgive those who trespass against us, and lead us not into temptation, but deliver us from evil, for Thine is the kingdom, and the power, and the glory forever and ever, Amen. May the grace of our Lord, Jesus Christ, the love of God, and the fellowship of the Holy Ghost be with us this day and forever more, Amen.

REPORT OF COMMITTEE ON ARRANGEMENTS.

BY THE CHAIRMAN, DR. C. H. DOLLOFF.

The Committee on Arrangements beg leave to report that they have attended to the convenience and comfort of the Society in meeting here. The usual transportation rates were not secured, owing to the fact that the railroad people would not make any reduction unless a certain number were guaranteed, which is the reason why you did not receive the same. Every member is expected to register before coming into the meeting. All meetings of the convention will be held in this hall. A reception to our distinguished guests will be held at Eagle Hotel at 7 p. m. this evening, followed by a banquet at 8 'clock. The management of the New Hampshire State Hospital, Margaret Pillsbury Hospital, and the New Hampshire Memorial Hospital for Women extends a cordial invitation to visiting members to inspect their respective hospitals during their stay in the city.

The President then appointed the following:

Committee on Reception of Delegates—Wm. T. Smith, Hanover; George Cook, Concord; A. H. Harriman, Laconia.

Doctors Dutton and Baker, delegates from the Massachusetts Medical Society, were introduced to the Society; also Doctor Brown, from the Rhode Island Medical Society.

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The President, Dr. John M. Gile of Hanover, then read the annual address.

Vice-President Blaisdell stated that the President's address would be referred to the committee appointed to consider same.

The reading of papers was then commenced, with an address by Dr. John B. Deaver of Philadelphia, entitled "Surgery of Stomach." The discussion was opened by Dr. M. E. Kean of Manchester in the absence of Doctor Prouty, and continued by Dr. F. B. Lund of Boston and Dr. Frank Blaisdell of Goffstown.

On motion of Doctor Kean, a vote of thanks was extended to Doctor Deaver for the able and comprehensive paper presented by him.

The Society then adjourned for lunch.

AFTERNOON SESSION, MAY 13, 1909.

The meeting was called to order at 2.30 p. m., with Dr. D. E. Sullivan in the chair.

Dr. Albert E. Brownrigg of Nashua read a paper entitled "Some Recent Items of General Interest in Neurology." The discussion was opened by Dr. T. D. Luce of Portsmouth and Doctor Baker of Massachusetts.

M. D. Cobleigh, Esq., of Lebanon presented a paper entitled "The Liability of Physician to Patients." The discussion was opened by Dr. E. O. Crossman of Lisbon, followed by Hon. James W. Remick of Concord.

Dr. T. M. Rotch of Harvard University presented a paper entitled "The Development of Milk Laboratories in Regard to What Food Stuffs They Can Provide, and Their Relation to the Principles of Infant-Feeding." Discussion was opened by Mr. C. D. Howard, state chemist, and Dr. H. W. N. Bennett of Manchester.

Dr. H. W. N. Bennett of Manchester presented a paper on "Milk and Its Relation to Disease." Discussion was opened by Dr. G. C. Wilkins of Manchester.

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The Society then adjorned until 9.30 a. m. Friday morning.

MORNING SESSION, FRIDAY, MAY 14, 1909.

The Society met at 10 o'clock in Memorial Hall, with Doctor Blaisdell in the chair.

Dr. John B. Macdonald of Concord read a paper entitled "Hydrotherapy." Discussion was opened by Dr. C. R. Walker of Concord, followed by Dr. F. N. Rogers of Manchester, Dr. H. W. N. Bennett of Manchester, and Dr. F. L. Gerald.

Dr. A. F. Wheat of Manchester read a paper entitled "The Fashionable Shoe as Worn by the Human Foot Seen Through an X-Ray," a fine collection of X-ray photographs being shown and an assortment of gentlemen's shoes. Discussion was opened by Dr. F. N. Rogers, followed by Doctor Knowlton of Exeter, Dr. Louis W. Flanders of Dover and Dr. Anna M. Littlefield of New London.

Dr. Francis P. Emerson of Boston presented a paper, "The Responsibility of the General Practitioner and the Specialist in the Prevention of Deafness." Discussion was opened by Dr. L. W. Flanders of Dover, followed by Dr. George A. Weaver of Warren.

Dr. John W. Bowler of Hanover presented a paper entitled "The Hygienic and Physical Exercise Treatment of Cardiac and Neurasthenic Cases." Discussion was opened by Dr. John C. O'Connor of Manchester, followed by Doctor Brownrigg of Nashua and Dr. H. W. N. Bennett of Manchester.

Dr. E. E. Lake of Hampstead read a paper on "Empyema." There was no discussion.

The President called for the reading of the report of the House of Delegates by the Secretary, Dr. D. E. Sullivan.

See House of Delegates.

Dr. Frank Blaisdell, newly elected President, was intro-

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duced and briefly returned thanks for the honor conferred upon him.

The Society then adjourned until May 12 and 13, 1910.

REGISTRATION, MAY 13–14, 1909.

George Cook	Concord.
D. E. Sullivan	Concord.
Charles Duncan	Concord.
Frank Blaisdell	Goffstown.
S. M. Dinsmoor	Keene.
D. M. Currier	Newport.
F. W. Evans	Coös.
J. J. Cobb	Berlin.
Geo. C. Wilkins	Manchester.
Forrest L. Keay	Rochester.
G. H. Morrison	Whitefield.
W. T. Smith	Hanover.
E. O. Crossman	Lisbon.
Samuel J. Cogswell	Derry.
Fred E. Clow	Wolfeboro.
M. T. Stone	Troy.
Geo. H. Clarke	Concord.
F. A. Stillings	Concord.
J. B. Macdonald	Concord.
C. H. Dolloff	Concord.
F. E. Kittredge	Nashua.
John W. Parsons	Portsmouth.
Robert J. Graves	Concord.
E. E. Lake	Hampstead.
S. W. Jones	Franklin.
A. A. Beaton	Franklin.
A. W. Abbott	Laconia.
E. C. Chase	Plymouth.
A. Stephen Russell	Rumney.
A. S. Dolloff	New Hampton.
F. A. Bakeman	Franklin.

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C. I. Cole	Henniker.
A. W. Hopkins . . .	West Swanzey.
Walter L. Kelso . . .	Hillsborough.
F. L. Gerald . . .	Warren.
D. G. Underwood . .	Bradford.
N. L. Griffin . . .	New London.
J. E. Toye	Charlestown.
John W. Staples . . .	Franklin.
L. H. Cogswell . . .	Warner.
John C. Huckins . . .	Ashland.
G. S. Foster . . .	Manchester.
G. V. Fiske . . .	Manchester.
C. S. F. Whitcomb . .	Contoocook.
R. E. Gallinger . . .	Concord.
H. H. Amsden . . .	Concord.
Chancey Adams . . .	Concord.
Frank B. Easton . . .	Laconia.
E. F. Houghton . . .	Tilton.
J. M. Gile	Hanover.
B. T. Mousley . . .	Ashland.
E. T. Drake . . .	Franklin.
L. C. Aldrich . . .	Jefferson.
E. M. Worthen . . .	Ashland.
E. E. Graves . . .	Penacook.
C. O. Coburn . . .	Manchester.
W. A. Thompson . .	Manchester.
A. H. Harriman . . .	Laconia.
Irving A. Watson . .	Concord.
A. E. Brownrigg . . .	Nashua.
F. N. Rogers . . .	Manchester.
M. E. Kean . . .	Manchester.
M. S. Danforth . . .	Manchester.
C. F. Nutter . . .	Nashua.
M. A. Stark . . .	Goffstown.
A. C. Heffenger . . .	Portsmouth.
Eugene Wason . . .	Milford.

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Haven Palmer . . .	Plymouth.
C. S. Little . . .	Laconia.
A. M. Fernald . . .	Sutton.
I. G. Anthoine . . .	Nashua.
A. P. Richmond . . .	Dover.
W. Stanley Emery . .	Concord.
W. H. Leith . . .	Lancaster.
R. E. Webb . . .	Lancaster.
Wm. G. Ricker . . .	Wells River, Vt.
H. C. Holbrook . . .	Penacook.
E. P. Hodgdon . . .	Lakeport.
A. W. Petit . . .	Nashua.
A. S. Wallace . . .	Nashua.
A. W. Shea . . .	Nashua.
W. E. Reed . . .	Nashua.
Geo. L. Bastian . . .	Manchester.
W. H. Abbott . . .	Hillsborough.
Henry L. Stickney . .	Manchester.
E. B. Atherton . . .	Nashua.
M. L. Bugbee . . .	Concord.
Louis W. Flanders . .	Dover.
H. L. Sweeny . . .	Kingston.
John H. Dearborn . .	Salem, Mass.
Ralph H. Barker . .	Chester.
Emdon Fritz . . .	Manchester.
D. P. Goodhue . . .	Springfield.
Joseph Taylor . . .	Manchester.
L. Melville French . .	Manchester.
V. N. Sikorsky . . .	Salem.
G. H. Greeley . . .	Merrimack.
Bradford Allen . . .	Nashua.
L. G. Dearborn, Jr. . .	Derry.
C. E. Congdon . . .	Nashua.
S. S. Dearborn . . .	Nashua.
C. H. Holcombe . . .	Brookline.
H. O. Smith . . .	Hudson.

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W. P. Beauclerk	Concord.
J. S. Black	Nashua.
J. J. Buckley	Milton.
F. Von Tobel	Lebanon.
F. A. Smith	Lebanon.
Geo. W. Hatch	Wilton.
A. J. LaFrance	Laconia.
Russell Wilkins	Concord.
Arthur K. Day	Concord.
G. M. Kimball	Concord.
Charles R. Walker	Concord.
H. W. Newell	Manchester.
Henry C. Stearns	Concord.
Jas. T. Greeley	Nashua.
Loren A. Sanders	Concord.
Arthur F. Sumner	Manchester.
W. C. Rowe	Andover.
Chas. H. Cook	Concord.
H. N. Kingsford	Hanover.
E. A. Wallace	Manchester.
F. A. Sprague	Concord.
J. B. Pettengill	Amherst.
P. T. Haskell	Concord.
G. A. Tolman	Dover.
C. S. Gilman	Boston, Mass.
Edmund E. Hill	Suncook.
Frederick Perkins	Manchester.
C. F. Flanders	Manchester.
W. H. Pattee	Manchester.
H. D. W. Carvelle	Manchester.
George F. Munsey	Suncook.
A. Gale Straw	Manchester.
Zatae L. Straw	Manchester.
F. W. Grafton	Concord.
J. W. Bean	West Medford.
C. E. Butterfield	Suncook.

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H. S. Hutchinson . .	Milford.
N. C. Baker . . .	Milford.
E. A. Clark . . .	Concord.
Lillian G. Bullock . .	Manchester.
Ethel S. Mitchell . .	Concord.
J. E. A. Lanouette . .	Manchester.
George M. Watson . .	Manchester.
Elizabeth Hoyt-Stevens .	Concord.
J. H. Bates . . .	East Rochester.
D. L. Stokes . . .	Rochester.
J. B. Woodman . . .	Franklin.
C. M. Sneden . . .	Littleton.
H. L. Smith . . .	Nashua.
A. M. Littlefield . . .	New London.
J. E. Vallee . . .	Lebanon.
R. W. Weeks . . .	Manchester.
Chas. P. Buzzell . . .	Conway.
George A. Weaver . .	Warren.
Geo. W. McGregor . .	Littleton.
Geo. D. Towne . . .	Manchester.
H. M. Wiggin . . .	Whitefield.
A. W. Mitchell . . .	Epping.
Eva M. Locke . . .	Nashua.
John H. Gleason . . .	Manchester.
H. K. Faulkner . . .	Keene.
Chas. S. Walker . . .	Keene.
John G. W. Knowlton . .	Exeter.
E. W. Hodsdon . . .	Centerville.
D. W. Parker . . .	Manchester.
M. E. M. Flanders . .	Hopkinton.
Charles B. Drake . .	West Lebanon.
Francis P. Emerson . .	Boston, Mass.
G. Lafontaine . . .	Manchester.
W. P. Craig . . .	Walpole.
W. P. Grimes . . .	Hillsborough.
P. W. F. Corning . .	Manchester.

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G. P. Conn	Concord.
George H. Sanborn . .	Henniker.
A. F. Wheat . . .	Manchester.
John M. Page . . .	Littleton.
Thomas W. Luce . .	Portsmouth.
F. P. Claggett . . .	Newport.
W. E. Lawrence . .	North Haverhill.
E. M. Miller . . .	Woodsville.
Charles A. Morse . .	Newmarket.
W. H. Lyons . . .	Manchester.

The annual banquet was held at the Eagle Hotel Thursday evening at 7.30 o'clock, with one hundred and twenty-one members, guests and ladies in attendance.

POST-PRANDIAL EXERCISES.

Anniversary Chairman, H. N. Kingsford.

Speakers: Governor Henry B. Quinby; Prof. E. J. Bartlett, Hanover; Rev. Thomas Chalmers, Manchester; Dr. Thomas Morgan Rotch, Boston; Hon. J. W. Remick, Concord; "Father" Frank Cressy, Concord.

MINUTES OF THE HOUSE OF DELEGATES.

The first session was held at the Eagle Hotel Wednesday evening, May 12, at 8.30 o'clock, with the President, John M. Gile of Hanover, in the chair.

The following answered the roll-call and registered:

John M. Gile . . .	President.
Frank Blaisdell . . .	Vice-President.
D. E. Sullivan . . .	Secretary.
D. M. Currier . . .	Treasurer.
E. F. Houghton . . .	Belknap County.
F. B. Easton . . .	Belknap County.

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George C. Wilkins . .	Hillsborough County.
Frank E. Kittredge . .	Hillsborough County.
C. C. Rogers . . .	Strafford County.
J. J. Cobb	Coös County.
G. H. Morrison . . .	Coös County.
William T. Smith . .	Grafton County.
G. W. Lougee . . .	Carroll County.
F. E. Clow	Carroll County.
John W. Parsons . .	Rockingham County.
E. O. Crossman . . .	Grafton County.
Bayard T. Mousley . .	Cheshire County.
S. G. Morrill . . .	Merrimack County.

REPORT OF SECRETARY.

We have entered upon a new era. On the first day of the present month were realized the hopes of all who had worked long and faithfully that a more perfect union might be attained. Today in this Society from Coös to the sea is there welded together a firmer bond of fraternal sympathy and strength than ever before. Much good must come from the change, but with the change must come increased responsibilities, and the full benefits will not be secured unless we start aright. It is of the utmost importance that the County Secretary be a willing, active, fearless worker, and upon him, in a large measure, depends the future of this Society. If he fulfills his obligations, is punctual in his appointments, just to all men and business-like in conducting the affairs of his office, there can be no question of the result. Some of our secretaries are ideal, always enthusiastic and loyal. Perhaps it is asking too much in expecting all to be ideal, and it becomes each of you as representatives of your county in this body to see to it that the executive officer of your local society approaches as nearly as possible the ideal.

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COUNTY SOCIETIES.

More attention must be given to the component societies to arouse increased interest in their meetings and enlarge their membership. The sooner it is generally understood that from now on to belong to this Society one must be a member of his county society and that payments of all dues, excepting those comparatively few now members of the state but not of the county society, must come through the County Secretary, the better the result. One meeting a year is certainly not complying with that advice of the by-laws, "frequent meetings shall be encouraged," and is not sufficient to stimulate a healthy concern in professional subjects.

I regret to say that two of the societies did not hold any meeting the past year. That would hardly happen did their regulations provide for more than one meeting in the year. It is not giving a fair opportunity to that large number of non-affiliated to become affiliated; it is not providing sufficient material of the right kind for our state program. Quarterly meetings are not too frequent; semi-annuals should be the minimum. It would probably be well for this body to take some advisory action on this subject.

Following some correspondence a conference of the secretaries was called in this city February 9 and five of them attended. A free discussion of various matters, participated in by all present, proved the need of such a meeting.

Our membership has been materially increased by the accessions from our county societies and at the beginning of this fiscal year numbers, without Sullivan County, 501 members, with thirteen honorary members.

It is hoped the county societies will, within the next few years, embrace our total membership, and that as far as practicable members shall belong to the society of the county in which they reside. One cannot be an active member of more than one county society.

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Delegated by you to attend the conference of state secretaries at Chicago last June, it is a pleasure to report a most enjoyable meeting of earnest men and women devoted to the advancement of the interest of medical associations in the different states of the union. A permanent organization was formed and many topics of peculiar interest were presented for consideration. All sections save New England were well represented and much information relating to the work of an organized profession was received.

Dr. N. G. Brooks of Charlestown has kindly presented to the Society a copy of the charter and by-laws, with list of members, printed in June, 1822.

Dr. William T. Smith of Hanover was appointed by the president member of the National Council on Medical Education.

The name of Dr. J. F. Robinson of Manchester, with Dr. G. C. Wilkins as alternate, to represent this Society on the Board of Medical Examiners was sent by your direction to His Excellency the Governor and the Council, and Doctor Robinson was appointed for the ensuing term of five years.

D. E. SULLIVAN.

The following expression with reference to the new building for the Medical School was adopted by the faculty of Dartmouth College at their annual meeting September 11, 1908, and it was directed that it be sent to the benefactors named below.

Our new building, called by vote of the trustees after the founder of the school Nathan Smith Hall, is ready for use. This gives us 1,700 feet of space for laboratories histological, bacteriological and pathological, as well as an additional lecture room, a library room, a sitting room and other conveniences for students. The fund also permits us to reconstruct the north end of the old building, so as to provide 1,600 feet of space for the physiological laboratories. These additions will make for increased effi-

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ciency, and will enable us to meet the demand for a more complete scientific training of candidates for the medical profession. We desire to express our renewed thanks to the president and trustees of Dartmouth College, to the New Hampshire Medical Society for its liberal gift of one thousand dollars, to Ex-Governor John B. Smith, to Mr. Herbert D. Wilder, to Mr. Adolph Lewisohn, to Mr. Seth M. Richards, and to the numerous alumni who have contributed to the fund.

WILLIAM T. SMITH,
Dean.

REPORT OF COMMITTEE ON SCIENTIFIC PROGRAM.

We had received assurance that our session would be honored by the presence of Dr. Herbert L. Burrell, the president of the American Medical Association, but at a late day he reluctantly was forced to cancel the engagement to keep one made necessary through his official duties.

Drs. John B. Deaver of Philadelphia, Thomas Morgan Rotch and Francis P. Emerson of Boston, eminent men and well known in their specialties, have kindly accepted invitations to address us.

There have not been presented any papers by several of the county societies for our consideration this year, so the material to draw from was thereby limited. However, a most satisfactory program has been prepared and will, without doubt, meet your approval.

D. E. SULLIVAN,
LOUIS W. FLANDERS,
J. J. COBB,
Committee.

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REPORT OF COMMITTEE ON PUBLICATION.

Ira C. Evans Co. of Concord were the lowest bidders for printing and binding the transactions of the year and were awarded the contract. In pursuance of your instructions, 600 copies were printed and 550 of them bound. The work was done promptly and to our entire satisfaction.

D. E. SULLIVAN,
JOHN M. GILE,
D. M. CURRIER.

TREASURER'S REPORT.

To the New Hampshire Medical Society:

Your Treasurer begs leave to make the following report for the year ending May 1, 1909:

DEBIT.

1908.			
May	1.	To cash on hand as per last report	$444.94
	15.	To cash from sale of dinner tickets	168.00
		To cash from exhibitors . ..	81.50
1909.			
May	1.	To cash received for fees and dues for the year	882.00
		Amount	$1,576.44

CREDIT.

1908.			
May	14.	By cash paid H. R. Felt, orchestra	$30.00
	15.	By cash paid Eagle and Phenix Hotel Company . . .	174.00
	16.	By cash paid D. M. Currier, salary and postage for the year ending May 1, 1908	82.26

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	19.	By cash paid A. H. Harriman, fare and lodging . . .	2.00
	25.	By cash paid Dr. Charles L. Scudder, expenses	7.00
	25.	By cash paid Dr. Joel E. Goldthwaite, expenses . . .	6.00
	25.	By cash paid John F. Webster, use of hall	25.00
	25.	By cash paid Dr. S. M. Dinsmoor, trustee	9.16
	28.	By cash paid Prescott Piano Co. .	5.00
July	2.	By cash paid Lena T. Marsh, stenographer	28.50
Aug.	8.	By cash paid John B. Cooper, P. M., stamped envelopes . . .	10.62
	17.	By cash paid Ira C. Evans Co. .	452.41
Nov.	2.	By cash paid Dr. D. E. Sullivan, salary and supplies . . .	238.05
1909.			
Feb.	26.	By cash paid Rumford Printing Co., receipt book . . .	2.66
April	5.	By cash paid American Medical Association	2.00
	21.	By cash paid Rumford Printing Co.	11.50
May	1.	By cash paid Dr. D. E. Sullivan, salary and supplies to date .	261.84
	1.	By cash paid to Dr. D. M. Currier, salary to date	65.00
	1.	By cash paid St. Louis Button Co., badges	16.60
		Amount paid out	$1,429.60
Cash on hand		. . . . .	$146.84

Respectfully submitted,

D. M. CURRIER,
Treasurer.

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CONCORD, N. H., May 12, 1909.

We have this day examined the accounts of D. M. Currier, Treasurer, to date of May 1, 1909, and find them correctly cast and properly vouched.

WILLIAM T. SMITH,
S. M. DINSMOOR,
JOHN W. PARSONS,
Trustees.

On motion of Doctor Lougee, report accepted.

REPORTS OF COUNCILORS.

REPORT OF MERRIMACK COUNTY.

(Doctor Walker not present. Report read by Secretary.)

Meetings were held on the second Tuesdays of April, July and October, 1908, and January, 1909.

At the meeing in April a most instructive paper on "Obstetric Practice" was read by Dr. L. V. Friedman of Boston.

In July the society was most hospitably entertained by the physicians of Suncook.

Dr. H. P. Towle of Boston read an interesting paper on "Diseases of the Skin" at our October meeting held in Pembroke, at Doctor Adams' summer cottage, which he very generously opened for the occasion.

The annual meeting for the election of officers was held in January at Concord. Dr. John W. Staples of Franklin was chosen president; Dr. P. T. Haskell secretary and treasurer. The active members of the society now number seventy-eight, with an average attendance of twenty-three. We have lost three members by death the past year, and three for various reasons have been dropped. Four new names have been added to our membership.

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The year has been most satisfactory—many good papers read, discussions started and cases shown.

CHAS. R. WALKER,
Councilor.

REPORT OF CHESHIRE COUNTY.

Professional matters in Cheshire County have been very quiet the past year and the profession seems to be united and harmonious.

The Cheshire County Medical Society has a membership of thirty-eight, four of whom were admitted during the year, and there are five non-members in the county.

The society held four meetings, most of which were well attended, and several interesting and instructive papers were read from parties outside the society. At the spring meeting Dr. F. E. Kittredge of Nashua presented a paper upon the "Accidental and Other Infections of the Mouth and Throat."

By invitation of Dr. J. A. Craig of Westmoreland the midsummer meeting was held at Maplewood Farm, the Cheshire County almshouse, and Doctor Craig gave a paper upon "Melancholia."

At the fall meeting Dr. W. F. Hazelton of Bellows Falls, Vt., gave a paper upon the "Treatment of Diffuse Septic Peritonitis."

At the winter meeting Dr. Chas. M. Whitney of Tufts Medical School gave an excellent paper upon "Modern Methods of Diagnosis and Treatment of genitourinary Diseases."

The society took definite action regarding contract work and at the meeting of the society February 10 it was voted that contract work in Cheshire County shall be defined as follows: All town, city, state and fraternal work and work for a lodge, society, organization or corporation for which a fixed salary is given.

No member of the Cheshire County Medical Society

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shall do contract work, and its members are prohibited from consulting with any physician doing such work.

No member shall attend town, city, county or state patients, or attend the members of, or answer calls for, any society, organization, lodge or corporation for less than the regular fees of the town or locality where such society or organization is located. The penalty in each instance is expulsion, by vote of the society, from its membership.

This shall go into effect April 1, 1909, in all cases except where members are legally bound by contract, in which case it shall go into effect at the expiration of said contract.

M. T. STONE.

REPORT OF ROCKINGHAM COUNTY.

(Doctor Mitchell not present. Paper read by Secretary.)

To the House of Delegates, N. H. Medical Society:

The Rockingham Medical Society held but one meeting, its annual, during the past year. J. J. Berry, M. D., the president, presided and presented an address on "Mystic Medicine," notable by reason of the interesting substance and excellent English. Several other papers were read, which were followed by earnest and profitable discussion.

The society at present has a membership of forty-nine. During the year six were lost by removal, three by death, and three new members were added. Peace and good fellowship prevail among the membership.

Respectfully submitted,

A. W. MITCHELL,
Councilor.

REPORT OF HILLSBOROUGH COUNTY.

(Doctor Greeley not present. Doctor Kittredge.)

In Hillsborough County we have 110 members. We had a meeting in Nashua in March or April—a very interesting meeting. I cannot recollect who read the papers. At the

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present time peace and harmony prevail throughout Hillsborough County. Doctor Brown of Manchester is the only death I think of in Hillsborough County during the past year. One meeting is all that was held this year. We had all of fifty men present at our spring meeting out of a membership of a little over a hundred.

REPORT OF BELKNAP COUNTY.

(Doctor Harriman not present. Doctor Easton.)

We have had a meeting every month—the second Monday of every month, and we always call for two papers, and usually have them. During the last year we have had two papers by invitation, one from a lawyer and another from Doctor Staples of Franklin. The number of physicians in the county is somewhere about thirty. I don't know exactly. About twenty members in the society, with an average attendance of about eight and a half. The interest is very strong, I think, among the majority of the physicians there.

REPORT OF GRAFTON COUNTY.

(Dr. William T. Smith.)

I can only make a general report for Grafton County. We have two meetings in a year and they are generally very well attended and of very much interest. At our last meeting, in December, we had a talk on the relations of the profession to the law, which I suppose we will have substantially at our meeting tomorrow or the next day. And we had an interesting paper on "Tonsilitis" from Doctor Carleton. Our Councilor, Doctor Woodman, died this spring, and in losing him the society has lost one of its most valuable members, a man who was always ready with genial and earnest spirit to do whatever he could for the interests of any society to which he belonged, and has had a great deal to do with the interest and success of our county society.

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REPORT OF SULLIVAN COUNTY.

(Doctor D. M. Currier.)

I haven't anything very encouraging to report from Sullivan County. We nominally have a society there but we have not had a meeting during the year that I know of. I had a talk with our president in the spring and he very kindly consented to come down and visit us if we would get together. I talked with the secretary about it and some others, and did my utmost to have a meeting called. We are somewhat peculiarly situated. The Sullivan County Medical Society started in Newport and was carried on, as long as it was carried on, by physicians there. Claremont, the adjoining town on the west, which is larger than Newport and has more physicians, has never taken, as a general thing, any part in the society. There have been two or three from there come in, but most of the physicians in Claremont ignore it entirely, and that is about the situation in Sullivan County. There is, in several ways, a little feeling of jealousy between the two towns, along various lines, commercial and others, and I presume that has something to do with it. The members at Newport have gone over to two or three different meetings held there, but that didn't bring in the physicians from Claremont very much.

Dr. William T. Smith: I wish that the Councilor from that county would do something to stir up the Claremont men. There are a lot of good men there and might add a great deal to the interest of the State Society, and might have an interesting county society.

I move that the Councilor for Sullivan County be requested, during the coming year, by the House of Delegates to make a special effort in Claremont, himself, and with whatever assistanec from the president of the society and others he chances to get, to persuade the leading men in

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Claremont to take an interest in the county society and state society.

Motion carried.

Dr. Wm. T. Smith moved that the House of Delegates instruct the Councilor of Sullivan County to make every effort during the coming year to reorganize and secure a working society in Sullivan County.

Motion carried.

REPORT OF COMMITTEE ON MEDICAL DEFENSE.

F. A. STILLINGS.

The President and I were the only members of that committee present this afternoon at a meeting, and talked over this matter of medical defense. We studied somewhat the laws of New York, Massachusetts and Illinois, and of those three the Illinois law seemed to be the best. Then we discussed the effect it would have in this state at the present time, and there seemed to be some question whether defense of suits might not prejudice us before the public in the laws as constituted in these other states. So we consulted the firm of insurance agents who represent the largest and best managed companies of insurance for physicians' liability. It seems that the laws of these different states provide that from the funds of the Society money be taken to hire a lawyer, pay for witnesses and other court expenses, up to the point where the damages are assessed against the defendant. There they stop. They do not undertake to pay any judgment which is found against the physician or surgeon. In putting this matter before the insurance men, one of whom is a lawyer and the other a man of very large experience, both said that while they had no doubt their companies would not be opposed to share the expense of defending any case *pro rata* with the New

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Hampshire Medical Society, they thought the acting with the Society in that way would prejudice every case that came up, and they doubted what the attitude of their companies would be, and advised us to talk with their attorneys, Streeter and Hollis. We consulted with Mr. Hollis, who was the member present, and after considering the matter from all points, he said if it could be kept secret, which he realized was impossible, it might be of some service in securing evidence. He said the same as the insurance agents did, that the companies would no doubt be glad to accept the donation, but the plaintiffs' lawyers would manage some way to get it before the jury that the doctors were banded together to defeat the plaintiff from getting what was his just due, and he would advise against any such action being taken. He thought it would make the case much harder to defend and be an injury in every direction. He said he realized the desirability of every doctor in the state of New Hampshire standing by every other doctor; that owing to the results of recent suits which have been brought in the state he had not much doubt but that every man realized that he might be the next one, and in consequence he felt pretty certain that doctors were like other people. They were hanging together at the present time and would stand by each other and testify for each other just as well without action on the part of the Society as with it. That being the case, if it was done it would simply give a handle for the plaintiffs' lawyer to attack them with before the jury. I think that the President and myself agreed very fully with what Mr. Hollis said. That is as far as we went, and that would be my report.

President Gile: It is a question in my mind whether the Delegates are of one mind in regard to that matter.

Our report is adverse to taking action for medical defense in the Society. It was merely a question of whether you wished to discuss it and others had a different view. If

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there is no call for discussion, I would simply, as a member of the body of Delegates, make it as a motion that the report of the committee be accepted, it being understood that it is an adverse report. I do not care to discuss it unless someone else is favorable to medical defense. I was strongly in favor of it, but after our investigation, and in spite of the fact that the states that have already adopted it, Illinois and New York, in which states it has longest been in action, report very favorably for it, I look at our situation, I believe, as Doctor Stillings has put it to you, that it would prejudice every case that came to trial. Personally I think I should prefer to depend upon the assurance of the insurance company in regard to that.

Report accepted.

(Vice-President in chair.)

REPORT OF DELEGATES TO DARTMOUTH MEDICAL COLLEGE.

I had the pleasure this spring of attending the graduating exercises at Dartmouth, and also of seeing them a year ago, as Junior Delegate, and was present this year with Doctor Heffenger of Portsmouth as Junior Delegate. Doctor Hammond of Vermont represented the Vermont Society. There were fourteen men graduated, all apparently bright young men. All passed creditable examinations before the Delegates and gave promise of being useful members of our profession. At that time many of them had secured hospital appointments in various cities and I trust that at this time they have all secured appointments. I had great pleasure in attending the exercises. There was quite a large attendance at the hall. In the evening the college authorities gave a banquet to the graduating class and to the Delegates. I am sure I shall long remember my visit to Dartmouth Medical College.

F. E. KITTREDGE.

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REPORT OF NECROLOGIST.

Deaths of members of N. H. Medical Society for year ending May 1, 1909:

James Frank Brown of Manchester, July 29, 1908.
Frederick Russell Cummings of Concord, August 8, 1908.
Manley W. Work of Manchester, August 20, 1908.
Henry A. Weymouth of Andover, October 22, 1908.
Edward M. Tucker of Derry (formerly of Canaan), December 8, 1908.
Gillis Stark of Manchester, December 13, 1908.
James Scribner Brown of Manchester, February 22, 1909.
Milton S. Woodman of West Lebanon, February 27, 1909.
Henry A. Hildreth of Bethlehem, March 25, 1909.
Ezra Mitchell of Lancaster, April 20, 1909.

(President Gile in chair.)

DOCTOR SMITH: I move an amendment of the by-laws, that the assessment of two dollars per capita be made the annual dues of the Society, and that there shall be an initiation fee of three dollars charged to each entering member of the county society, which shall be added and credited to the State Society.

After a lengthy discussion, participated in by all present, the motion was withdrawn.

DOCTOR CURRIER: In regard to the payment of dues in arrears, this has been handed to me by the Secretary of the State Society:

Seventy members paid their annual dues, including those who were not previously members of the Society. Among those who have paid two dollars there are some more than one year in arrears. Some have not paid for 1908; some have not paid for 1907 and 1908 also. Where shall the two dollars that has been turned over to me be credited, on 1909, or the years in which they have not paid?

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PRESIDENT GILE: The arrears for the two years past should be collected by the Treasurer of the State Society rather than by the county society.

DOCTOR CURRIER: At the commencement of this fiscal year there were eleven members who were more than three years in arrears for dues. I sent a personal letter to each one of these eleven members, and some of them have paid. The following have not paid: William Alva Brady, 841 No. Broad Street, Philadelphia; John J. Osterhout, Marlow; George H. Parker, Wells River, Vt.; F. T. Woodbury, Wakefield, Mass.

I would move you, considering the physical condition of Dr. C. F. George of Goffstown and his having been a member of the Society for several years, that his name be put upon the honorary list of this Society, and his dues remitted.

Motion carried and referred to the Council.

On motion, voted that those who have not paid their dues for three years back be referred to their respective county societies.

On motion of Doctor Wilkins, it was voted to recommend that the county societies shall drop members who are three years in arrears in the payment of their dues, and that the House of Delegates advise the members of the component societies that the time shall be three years before suspension from the Society shall be made.

DR. WM. T. SMITH: I move that a committee be appointed to convey to the Bar Association the request of this Society that a committee be appointed by the Bar Association to confer with a committee of this Society in regard to expert medical testimony, to report to the House of Delegates next year.

So voted.

On motion of Doctor Smith, voted that a committee of

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five be appointed by the chair for the above purpose, and that the acting President be one of the committee.

Voted to adjourn to 9.30 tomorrow morning.

The House of Delegates met at 9.30 Thursday morning, May 13, according to adjournment.

(President Gile in chair.)

Reading of Secretary's records omitted.

The following committee on conference was appointed by the President to meet with a committee from the New Hampshire Bar Association: F. A. Stillings, Concord; E. O. Crossman, Lisbon; G. C. Wilkins, Manchester; J. J. Cobb, Berlin; J. M. Gile, Hanover.

The following committee on nominations was appointed by the chair: J. W. Parsons, Rockingham County; E. F. Houghton, Belknap County; B. T. Mousley, Cheshire County; F. E. Kittredge, Hillsborough County; C. C. Rogers, Strafford County; S. G. Morrill, Merrimack County; J. J. Cobb, Coös County; G. W. Lougee, Carroll County; E. O. Crossman, Grafton County.

PRESIDENT GILE: As Sullivan County sent no delegates, I cannot appoint from that county.

There are some papers and communications received during the year from various organizations and otherwise, all of which would better be referred to a committee that could meet and report tomorrow morning.

On motion, voted that a committee of three be appointed by the chair to take into consideration the various documents that have come to hand, with the request for action by the Society.

The following committee was appointed by the chair: G. C. Wilkins, G. H. Morrison and B. T. Mousley.

On motion of Doctor Blaisdell, duly seconded, voted that the Secretary continue to send, as formerly, certificates of membership to all new incoming members to the Society.

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On motion of Doctor Smith, voted that in case of vacancy existing in the position of Secretary, the President of the Society be empowered to appoint a Secretary *pro tem* to act until the next regular meeting, and that the amendment be added to section 4 of chapter VI.

COMMITTEE ON HISTORY.

The following report was made by Doctor Parsons, as a member of that committee:

Doctor Watson said he could not well be here and wanted me to bring the matter before the House of Delegates. I think it was last year that a vote was taken to publish the first fifty years of the Society's history.

Doctor Watson suggests that the history be published up to the year 1854, in which year the first public history of the Society was published. He says it will cost about a dollar a page, and a total of six or seven hundred dollars at a rough estimate, and his idea would be to publish perhaps five or six hundred volumes. I think that matter perhaps would better be left with the committee.

I would make an amendment, if it is proper, to the vote which was passed last year, that the history of the Society be extended to the year 1854, and the committee be given full power and report next year in full. He thought if this was satisfactory to the House of Delegates, the history could be forwarded so that it could be delivered, perhaps, in a year from this time, and that each member in good standing would be entitled to a copy.

On motion of Vice-President Blaisdell, the report was accepted and the committee was empowered to proceed with the publication of the history of the State Medical Society, to cover the years to 1854.

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VICE-PRESIDENT BLAISDELL: I move that when we adjourn we adjourn to 8.30 tomorrow morning.

Motion carried.

DOCTOR PARSONS: I move that the next annual meeting take place on May 12 and 13, 1910, Thursday and Friday, in Concord.

Motion carried.

Doctor Parsons read report of trustees.
On motion of Doctor Blaisdell, report accepted.

TRUSTEES' REPORT.

CONCORD, N. H., May 14, 1909.

The trustees of the New Hampshire Medical Society submit the following report:

The Bartlett fund on deposit in the Portsmouth Savings Bank, bank book No. B 21,110, amounted at last report to	$2,288.99
January, 1909, interest	69.17
Total	$2,358.16

Three hundred and fifty-two dollars and eleven cents of this sum is by the terms of the bequest a permanent fund, leaving $2,006.05 to the order of the Society.

The Pray fund on deposit in the Strafford Savings Bank at Dover, bank book No. A 42, amounted at last report to	$1,161.62
January, 1909, interest	40.99
Total	$1,202.61

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The original sum was $1,000, the increase only of which can be expended solely for prize essays.

The Society has also on deposit in the Merrimack River Savings Bank, Manchester, bank book No. 26,934, the sum of $923.33; in the New Hampshire Savings Bank, Concord, bank book No. 35,696, the sum of $267.99; in the Portsmouth Trust and Guarantee Company, bank book No. 12,-813, the sum of $969.69; total amount in the care of the trustees, $5,721.78, of which $4,369.67 can be expended by the Society.

Two essays were offered for the Pray prize. The prize of one hundred dollars offered last year has been awarded to George S. Graham, M. D., of Hanover, for the essay entitled "Primary Carcinoma of the Appendix."

A prize of $100 from the Pray fund is offered to the members of the Society for the ensuing year, concerning which a circular will soon be issued.

WILLIAM T. SMITH,
S. M. DINSMOOR,
JOHN W. PARSONS,
Trustees.

DOCTOR HOUGHTON: I move that a committee be appointed to consider the President's address.

Chair appointed same committee who have been appointed to consider miscellaneous papers.

On motion of Doctor Kittredge, Doctor Gleason was heard in regard to miscellaneous legislation.

DOCTOR GLEASON: I am here as a member of the legislative committee of the Manchester Medical Association. At the last meeting of the Medical Association of Manchester a legislative committee was elected and instructed to appear before this Society to request that some special effort be made to bring about the passage of a new law next session, and further to suggest to your body that if you should think wise you would take steps to set aside a sum of

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money to be used for the purpose of obaining counsel and paying such other expenses as might be necessary to enact a proper medical law. We in the larger towns and cities of New Hampshire feel the effect of the practice of the so-called professors, who come in and advertise widely and whose practice cannot be limited by any action under the present law. It is thought by the members of the Manchester Medical Association that early action should be taken in this and that everything should be done to organize early and properly get the law in order for its passage two years hence.

On motion of Doctor Blaisdell, the committee on legislation was authorized to secure legal services in any matter pertaining to their work for a sum not exceeding one hundred dollars.

On motion, adjourned.

FRIDAY MORNING.

Meeting called to order at 9 o'clock by the President.

Dr. F. E. Kittredge made the following report for the committee on nominations:

REPORT OF COMMITTEE ON NOMINATIONS.

President—Frank Blaisdell, Goffstown; John W. Staples, Franklin; A. H. Harriman, Laconia.

Vice-President—A. S. Wallace, Nashua; Geo. Cook, Concord; G. W. McGregor, Littleton.

Councilor Cheshire County—H. K. Faulkner, Keene.

Councilor Sullivan County—E. M. Fitch, Claremont.

Councilor Grafton County—Frederick Von Tobel, Lebanon.

Trustee—S. M. Dinsmoor, Keene.

Member Board of Medical Examiners—James T. Greeley, Nashua.

Alternate—Wm. E. Reed, Nashua.

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Delegate to American Medical Association 1910–'11.—F. A. Stillings, Concord.

Delegate to Dartmouth Medical College—E. O. Crossman, Lisbon.

Delegate to Council Medical Education A. M. A.—H. N. Kingsford, Hanover.

Anniversary Chairman—A. Noel Smith, Dover.

Necrologist—E. E. Graves, Penacook.

Committee on Scientific Work—Secretary *ex-officio;* J. M. Gile, Hanover; L. W. Flanders, Dover.

Committee on Public Policy and Legislation—President *ex-officio;* Secretary *ex-officio;* John M. Gile, Hanover; James T. Greeley, Nashua; F. A. Stillings, Concord.

Committee on Publication—Secretary, president and treasurer.

Committee on Arrangements—Merrimac County Society.

DELEGATES TO STATE SOCIETIES.

Maine—J. H. Neal, Portsmouth, F. L. Keay, Rochester.

Massachusetts—J. E. A. Lanouette, Manchester; Geo. W. Lougee, Freedom.

Rhode Island—Charles R. Walker, Concord; E. T. Drake, Franklin.

Connecticut—J. J. Berry, Portsmouth; J. G. W. Knowlton, Exeter.

Vermont—E. F. Houghton, Tilton; Wm. A. Megrath, Loudon.

New York—C. F. McGahan, Bethlehem; Geo. H. Morrison, Whitefield.

Doctors Wilkins and Cobb were appointed a committee to receive, sort and count ballots.

Frank Blaisdell of Goffstown having received the majority of ballots cast was elected President for the ensuing year.

A. S. Wallace of Nashua having received the majority of ballots cast was elected Vice-President for the ensuing year.

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On motion of J. J. Cobb of Berlin, it was voted that the Secretary be instructed to cast one ballot for the remainder of the officers presented, and having attended to that duty, he declared them elected.

REPORT OF BOARD OF MEDICAL EXAMINERS.

A meeting of the board representing the New Hampshire Medical Society jointly with the boards from the Homeopathic Medical Society and the eclectic medical societies of the state of New Hampshire was held at the regent's office at Concord, N. H., May 13, 1909.

Amongst other matters that came up for discussion was that of requiring a certificate of membership in the home medical state society of an applicant for license through reciprocity. It was the unanimous decision of the boards that no application for such a license could be considered unless the applicant submit proofs that he is a member in good standing of his state medical society. It was also voted that these joint boards of medical examiners favor the addition of the equivalent of one year in college in addition to the usual high school education as preliminary to matriculation in medicine. It was also the unanimous opinion of the boards that the present medical practice act of the state of New Hampshire is obsolete, contradictory and unsatisfactory, and that a new statute reducing the three boards to one is needed. A committee of six to consider this matter and to meet the legislative committee of the state societies was appointed, as follows: Doctors Cook, Robinson and Greeley of the N. H. Medical Society; Doctors Sweet, Wiggin and Bishop of the Homeopathic Medical Society. The meeting of the joint boards then adjourned.

JAS. T. GREELEY,
Secretary.

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CONCORD, N. H., May 13, 1909.

Following the joint meeting of the three boards a meeting of the board representing the New Hampshire Medical Society was held, Doctor Cook presiding.

No business of importance was brought before it and the meeting was adjourned.

During the past year the summary of the examinations held is as follows:

July 15–16, 1908, fourteen examined, nine passed, five failed.

December 29–30, 1908, twenty-one examined, fourteen passed, seven failed.

JAS. T. GREELEY,
Secretary.

Doctor Wilkins, from committee to consider memorials, reported favorable action on question of vasectomy; no action by Society, but as individuals, in matter of relief to widow of Doctor Carroll; directed the Secretary to transmit to Senator Gallinger the action of the House of Delegates in opposition to any measure tending to restrict scientific experimentations on animals, and referred to committee on legislation the question of licensing so-called optometrists, as meriting united opposition.

On motion of Doctor Sullivan, the following committee was directed to report to the next annual meeting what changes, if any, need be made in the Constitution and By-Laws: Geo. Cook, C. R. Walker, Geo. C. Wilkins, Wm. T. Smith, L. W. Flanders.

The Council reported organization, with Chas. R. Walker president and James T. Greeley secretary.

Such questions of ethics as had been reported to them were referred to the proper component societies.

Voted to adjourn.

D. E. SULLIVAN,
Secretary.

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President's Address.

JOHN M. GILE, HANOVER.

I cannot adequately express my sense of appreciation of the responsibility and honor that this Society has conferred upon me. Had I endeavored to do so a year ago, when I became your President, I should have thought and spoken chiefly of the honor. Today, after a year in your service in this capacity, and looking at that year in retrospect, though I would not have you believe me ungrateful for the honor, it is the responsibility alone that impresses me.

With this feeling in mind, instead of discoursing on the past glories, the present progress and the future prospects of the medical profession, it is my purpose to discuss as clearly as I may some of the problems that confront the New Hampshire State Medical Society and some lines of action that inevitably open before it.

In an organization like our own two general methods of proceedure are open. One along the line of a loose association, with little machinery and little of paternalism in our methods; merely enough of organization to attend to our own internal affairs and direct our scientific work, letting our activities as a society stop at those margins where the profession as a profession comes in contact with other associations, with legislation or with the public as a whole. Such informal and intimate coming together seems the natural way for the meeting of those whose thought and work lies along the same line.

The other method of procedure represents a radically different principle, and is inevitably suggested by the whole trend of affairs in our time toward industrial and social

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organization. This means the maintenance of a carefully officered machine, in which the individual is to a great degree submerged. It means carefully constituted committees and delegated authority. It means most diligent and painstaking work on the part of those officers, and that, not on the internal affairs of the Society, but chiefly at those margins previously referred to, where we meet questions of legislative and public polity.

The first method certainly carries its appeal as the more dignified and becoming course of procedure for a scientific body. Have conditions arisen as a result of which the interests of the profession demand that we enter upon the broader lines of action indicated in the second course?

With my own feeling strongly in favor of the simpler method, I am still bound to present to you certain conditions confronting us that seem to call for the more complex.

First let me briefly call attention to the matter of expert medical testimony. In its present status it has been more discussed and more vilified, derided and condemned than it would seem possible for any system to be and live, but it is still with us and without prospect of change. The suggestion has many times been made that certain physicians be designated in the various counties, one of whom should be called by the court in those cases that have medical features. The legal profession has in general been opposed to such a measure, and your legislative committee felt, after discussion of the subject, that it would be impossible to force one through the last session of the General Court.

The following act was introduced in the New York Assembly in March of the present year:

AN ACT to Regulate the Introduction of Medical Expert Testimony.

The People of the State of New York, Represented in Senate and Assembly, Do Enact as Follows:

SECTION 1. Within ninety days after this act shall take effect the justices of the Supreme Court assigned to the ap-

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pellate divisions thereof in the several departments shall designate at least ten and not more than sixty physicians in each judicial district who may be called as medical expert witnesses by the trial court or by any party to a criminal action in any of the courts of this state, and who, when so called, shall testify and be subject to full examination and cross-examination as other witnesses are. Any designation may at any time be revoked without notice or cause shown, and any vacancy may at any time be filled by the justices sitting in the appellate divisions.

SECT. 2. When so directed by the trial court, witnesses so called shall receive for their services and attendance such sums as the presiding judge may allow, to be at once paid by the treasurer or other fiscal officer of the county in which the trial is had.

SECT. 3. This act shall not be construed as limiting the right of parties to call other expert witnesses as heretofore.

SECT. 4. This act shall take effect September first, nineteen hundred and nine.

From the last information I received concerning it, it seemed probable that it would not pass. If any such legislation will give greater authority to medical expert testimony in the minds of court and jury it is by all means a thing to strive for. As a means of forwarding such legislation I would suggest that, as a body, or through your House of Delegates, you invite the New Hampshire Bar Association to name a committee of conference to meet a like committee from this Society for friendly consideration of the subject. Any agreement arrived at by such conference could without doubt be made law.

The American Urological Association is directing its attention to a propaganda for the sterilization by vasectomy of criminals, idiots and other defective classes. This association requests the N. H. Medical Society to pass resolutions favorable to the legalization of such procedure. I shall at the proper time present this matter to the House

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of Delegates. It seems wise, however, that the rank and file of the profession should take note of the matter, for should it come to a question of legislation the educative influence of the physicians of the state must be depended upon to direct public interest and sentiment. The appalling frequency with which the defective reproduces his own or a still more degenerate type is not appreciated even by the members of the medical profession unless special study has been given to the subject. That famous family whose genealogy is recorded under the name of "The Jukes" showed among seven hundred descendants fifty-five per cent. of criminals and paupers, and in the course of a century cost the state of New York over a million and a quarter of dollars. Some check on such procreation is an economic and moral necessity. Segregation has been the approved method of applying the check. It is expensive to the state and unsatisfactory to the subjects so controlled. Indiana legalized vasectomy two years ago for criminals and defectives. Eight hundred cases have thus been sterilized. The operation is slight, vitality not impaired, nor sexual sense interfered with. Oregon has just followed Indiana by enacting a similar law, and like action on the part of other states is to be expected.

The matter of suits against physicians for alleged malpractice is always one of disturbing interest to the profession, and is one that has loomed especially large in New Hampshire in the past year. With the statute law that relates to the subject we have no just ground of complaint. In the way of preparation or fitness and ability for the work, that law only demands that the individual have the ordinary or average skill of the physicians of that vicinage. Under the present legalized procedure for securing a license it would appear that its possession alone would constitute prima faciæ evidence that its holder had this average skill and ability. Beyond this the law demands that the physician shall have used his best judgment (based

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on this average skill) in deciding on his course of action. The judgment may not be the same that another would have made under the same circumstances, but so long as it is honestly and carefully made its author is relieved of responsibility. Beyond this the physician must carry out the line of treatment that his judgment has determined upon with all due care and attention. Here the law evidently contemplates placing responsibility for gross neglect, for reckless disregard of the patient's welfare or for errors due to the influence of alcohol or other drug. No conscientious physician would claim that this was more than a just requisition. Under the law no demand is made upon him to cure the patient or that he be a miracle of skill and success. It evidently expects of us only that which we ourselves claim for our art, *viz.*, that with care and skill we so fix the conditions about the diseased organ or organs that the great vital power of nature may do her work with the least possible impediment.

With the law so just to us, why does the subject give us concern? Simply because no jury seems to take so insignificant a matter as the law into account in making up its verdict. If the plaintiff can show visual evidence of anything less than an absolutely perfect result the defendant is likely to be called upon to pay for that which was only under the control of a higher than human power.

Such being the case our defenses must be of the strongest possible. It must be admitted that a case often has its inception in the unguarded remark of another physician. Occasionally the remark may spring from malice; more often it is mere thoughtlessness. We need some system that will make the malicious at least think twice before speaking and cause the thoughtless to refrain.

An organization, within the society, for medical defense appears to be giving highly satisfactory results in the states where it is in operation. New York, Illinois, Pennsylvania, Maryland, Iowa, Wisconsin, Missouri, Kentucky,

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Massachusetts and Nebraska have already adopted such plan. Association with this end in view would certainly be a check on the thoughtlessness referred to. It would also make members hesitate to appear in court as witness against a defendant physician, whose case was so just that the society would act as sponsor for him. It would also rule out those cases that are nothing more or less than blackmail that are brought in the hope that the physician will pay a small sum rather than be put to the inconvenience and expense of trial. Nor should the public feel that this action of the society was intended to defend its members, regardless of liability. A defense committee made up of a member or members from each county taking a case up with the retained attorney of the society would come to an equitable decision on the question of liability. If they believed such liability existed under the law, settlement would be advised, and if not, a united profession would support the defendant in the conduct of his case.

Our law that regulates the granting of license to practise in New Hampshire has several features that render it cumbersome and not without friction in its working. First the examination fee does not furnish sufficient funds to pay the absolutely necessary expenses of the regent and examining boards. The probability is that the numbers applying for admission to the examination will diminish rather than increase, thus causing greater deficit. Some step must be taken to meet the condition. Section 10, chapter 63, relating to medical license, gives the regent authority to arrange reciprocity with other states. Section 1 of amendment to chapter 63 gives this power to the boards of examiners without repealing the authority given in section 10. Fortunately the regent and boards have been a good working team and no disaster has resulted. It should be guarded against, however, by harmonizing this double authority, either making it a joint power or confining it to the boards or to the regent.

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Under section 4 the superintendent of public instruction of the state is made, *ex-officio,* the regent of the state boards of medical examiners. I would pay my highest compliment to the care and faithfulness with which the present incumbent has undertaken this work, but when we read farther and see what duties are imposed upon him in this *ex-officio* capacity, it makes it little less than absurd that any but a man with medical training should be asked to fill the position of regent.

The existence of three examining boards seems to be a needlessly awkward and cumbersome arrangement. One board, with representatives from each of the so-called schools of medicine, eclectic, homeopathic and regular, should be simpler, better coördinated and more efficient in action.

The present law apparently does not distinctly prohibit anyone from practising medicine so long as he does not attach the title of doctor or M. D. to his name. Complaint has come from various sections, particularly the cities, that unlicensed individuals are advertising and practising medicine with impunity under the title of professor, and that the authorities refuse to prosecute under the existing law. The prohibition of the law would appear to be against the assumption of the title of doctor rather than against the fact of practice.

In an effort to improve the law at the points above referred to your legislative committee presented to the last legislature a bill dealing with those particulars in what appeared to be a more satisfactory manner. Opposition developed from various and somewhat unexpected quarters. First the nurses' association objected to the change in the regent from a layman to a medical man. This affected them because the regent of the medical boards is by law regent of their board of registration. Why they were opposed to a medical man for their regent was not clear. It seemed to be a case of "because." It was the understand-

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ing of the committee that both the eclectic and homeopathic medical societies were satisfied to have the examining boards merged into one. This was true for the eclectics, but the plan met with opposition from the homeopaths, they being unwilling that any one school should have a majority on the board. The number of men licensed to practise in New Hampshire from the various schools of medicine, according to the last report of the boards, is as follows: Eclectics 25, homeopaths 75, regular 1,051. The contemplated law gave the eclectics and homeopaths each one member and three to the regular school, or two representatives from their combined 100 physicians, and but three for our 1,050. It would seem that the only lack of equity lay in the smallness of the majority asked for by our Society.

The third objection came from the osteopaths. A section had been framed defining what constituted medical practice, for the purpose of meeting the case of those previously referred to as practising without license under the title of professor. The osteopaths first claimed that this excluded them, but when shown that it did not, as they were included in the excepted classes of section 11, Christian Scientists, hypnotists, etc., their real purpose appeared, which was representation on the board and the granting to them of a regular practitioners' license. They were represented by attorney at a hearing before the public health committee of the legislature, who argued that their schools now gave courses in all the branches of medicine, and urged that the law be so revised that licenses could be granted them. He further contended that the present law was unconstitutional in that it specified what citizens might and what ones might not appear before the examining boards for license; in other words, that it was discriminatory.

The situation would appear to be this: There are seven osteopaths practising in New Hampshire. They ask the state to make a definitely retrograde change in its laws so that with less preliminary education, with a shorter course

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in medicine and without the degree of M. D. they may receive license. It seems likely that they will press this measure before the next legislature and that in the meantime they may test the constitutionality of the present law.

Your legislative committee had no purpose of in any way injuring or antagonizing any of the groups mentioned, but simply to make a more consistent law, the proposed changes involving no radical differences of principle from the present law. Hence when the opposition developed it was thought wise to let it die in committee.

In New York state osteopaths are legally licensed, but, in the words of the law, "A license to practise osteopathy shall not permit the holder thereof to administer drugs or perform surgery with the use of instruments." A bill pending before the present session of the general court of Massachusetts, and which has been favorably reported by the committee, makes the same restrictions, with the added prohibition against the practice of obstetrics. Future officers of this Society should be alert to see that like limitations are put upon any osteopathic license bill that may come before the legislature of New Hampshire.

The subject of requirements for license leads to a few words on the present status of medical education. New Hampshire, in common with nearly every other state in the union, has in recent years been through a definite campaign for its advancement. This movement has initiated partly in the medical profession, partly in the schools and partly in the public thought. The result is the remarkable change in the medical course of today as compared with that of fifteen years ago. From the side of the public, that is the state, there was no requirement for license, except that the applicant have a diploma and a degree from a medical school. And a medical school meant a variety of things. Any group of men could get together, hire a hall and start a medical school. Two courses of lectures of four months each, with perhaps requirement of a certificate of a year

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spent in a physician's office, gave the M. D. degree; and as these lecture courses in the various schools came at different times in the year, it was possible to get two, and a degree, in one year's time. From the side of the public, that is the law, you know the change—careful preliminary education, four medical courses in residence in four different calendar years, and an examination by a state licensing board.

The profession and the medical schools have supported this movement at every point and have in fact been largely instrumental in securing the laws. Not only so, but the schools are in many instances advancing their requirements beyond the demands of the law, particularly in the matter of preliminary education. Harvard and Johns Hopkins set the high standard of a college degree as requirement for admission; the one school of our own state will, after 1910, demand two years of college preparatory work, and very generally through the country one college year is being required. This has set a pace that cannot be competed with by the school in the hired hall. The whole system of instruction has changed. Laboratories, scientific equipment, specialized instructors and hospital affiliation are absolutely essential to the method of the present. These things cannot be supplied with the income from students' tuition fees. Today only the endowed school or the school that is a department of a college or a university can live. The medical school is no longer a money-making organization for those who control it, but rather a charitable educational institution for the benefit of the public. It would certainly be a grave mistake for New Hampshire or any other state to take a backward step by any legislation that would cripple the progress of the profession that is so closely related to our most valuable asset, *viz.*, public health.

In connection with the above the fact is to be noted of a marked decrease in the last five years of the number of students matriculated in the medical schools of

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the country. In 1904 there were 28,142 matriculants and 5,747 graduates, and in 1908 there were 22,602 matriculants and 4,741 graduates, a decrease of 5,540 students and of 1,007 graduates; and this despite the fact of a steadily increasing population. Several factors are probably responsible for this fact. The law of supply and demand affects an occupation as it does a commodity. Preventive medicine in the form of sanitation and the assembling of patients in hospitals has without doubt decreased the demand. The greater outlay in time and money has deterred many, while the wonderful promise of remuneration in the modern business career is attracting a much larger proportion of the type of college men who formerly thought only of the scholarly professions.

Such are some of our local problems and the tendencies in the progressive march of our profession. May the New Hampshire Society as a factor in this progress emulate in the century to come the modest but honorable record of the century past.

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Surgery of the Stomach.

JOHN B. DEAVER, M. D., LL. D., PHILADELPHIA.

Mr. President and Members of the New Hampshire State Medical Society:

When your invitation reached me to deliver the address upon this occasion, it was with great pleasure that I accepted, but with a feeling of want of confidence in myself to do justice to any topic that I might elect to talk upon. However, I have ventured to bring before this body the subject of "Surgery of the Stomach," at the present day attracting so much attention, and, when done in proper cases, doing so much good.

It would be natural to suppose that the stomach would furnish us in its diseases an example of an organ of which the pathology is clear, diagnosis simple, and treatment definite. We have under consideration a viscus at the very beginning of the alimentary tract. It can be percussed, palpated and outlined; its contents can be measured and easily withdrawn for chemical examination; indeed, the interior of the stomach may even be inspected. It has certain symptoms peculiar to its own diseases. To the physician it offers a field that can be most easily reached by drugs, local or general in action, and it can be emptied of its contents almost at will. To the surgeon it is easy of access, tolerant of interference and not essential wholly or in part to the maintenance of life.

Yet it is well known that in spite of all these facts we find that the diseased stomach offers us innumerable diffi-

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culties in diagnosis, and some of our most serious modern problems in treatment. At the very outset we are met by the fact that our methods of diagnosis, at least as far as the surgeon is concerned, are not only sadly lacking in definite features of value but sometimes even very misleading.

We can determine accurately the size of the stomach and its capacity for emptying itself. Further than this the ordinary methods of examination yield us nothing. When disease of the stomach has gone so far that we are definitely able to palpate a mass somewhere within its limits, we are almost always confronted by an essentially incurable malignant change in the viscus. The chemical examination of the stomach contents, of which so much was at one time expected, has proved disappointing in many ways.

As we have gradually become able to make our determinations more and more accurate, we at the same time have been forced to the conclusion that our chemical findings are of a purely negative value as diagnostic aids. At best they can but serve as confirmatory in certain instances in which the clinical evidence is so clear as to be beyond question. To this question I shall return later when discussing the value of a gastric analysis in individual affections of the stomach.

Pathologically speaking, the distinctive feature about diseases of the stomach with which the surgeon has to deal is the fact that acute infection, so important a factor in certain other intra-abdominal conditions, plays but a slight part in the surgery of the stomach. We are called upon to deal either with distinctly functional disturbances, in other words neuroses, or with one of two very grave conditions, ulcer or carcinoma of the stomach.

Functional disturbances and neuroses concern the surgeon only, in so far as regards their avoidance when surgical treatment is sought. It is often almost impossible to differentiate a purely functional disease from one associated with

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marked change in the stomach structure, and all our efforts to keep clear of it and to avoid surgical intervention go for naught because the symptoms seem so definite and are so extremely persistent. Every surgeon of experience has seen cases operated on for supposed ulcer, I take it, in which an almost healthy stomach has been demonstrated upon the operating table.

Of neuroses of the stomach we can only say that they are entirely beyond the realm of the surgeon. It has been lately proposed to perform stomach operations as a cure for recurrent nervous vomiting and other purely neurotic gastric phenomena. I can only say that I regard such surgery as vicious. The desired results can be accomplished far better in other ways. We must not lose sight of the fact that a gastric neurosis is in practically every instance but the local manifestation of a general condition, and that even if by operation we should be so fortunate as to cure the patient of his gastric neurosis, and that is more than doubtful, we would only substitute for it some form of post-operative neurosis, perhaps even more distressing and serious in its final outcome.

This brings us face to face with our real problems in the surgery of the stomach—ulcer and carcinoma.

Gastric ulcer is a disease, the cause of which has not yet been determined. We know that it occurs because of some lesion of the gastric mucosa and because of a subsequent inability of the stomach to recover. We know that early adult life and the female sex present us most of the examples clinically diagnosed and that this corresponds with the older autopsy findings. Lately the toxemic origin of gastric ulcers has been brought forward as a probable explanation of their ultimate cause, but the most we can say with certainty is that they are due to some remote form of chronic infection, possibly auto-infection. The very common association of hyperacidity and ulcer has been used as proof that the former is the ultimate causative condition,

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yet recent operative work and post-operative observation have led me to the belief that it is very likely that in some way the hyperacidity is caused by the presence of an ulcer, instead of the reverse being true. There are many cases also associated with a normal or even decreased acidity of the stomach contents.

As to classification, it has been customary to group ulcers as chronic and acute. Every ulcer of the stomach, however, is a chronic condition, and it is my custom to consider them in but two classes, the open and the healed or healing. As we will see, the condition of the ulcer has an important bearing upon both symptomatology and treatment.

Ewald states that we usually diagnosticate gastric ulcer when the classical triad of symptoms is present, hematemesis, which can be definitely traced to the stomach, typical and usually sharply localized pain occurring at regular intervals after the ingestion of food and the increase of hydrochloric acid in the stomach contents. However, he goes on to say that it is not necessary to wait until we have this definite combination; and fortunately it is not. I venture to state that by careful study we can make our diagnosis long before the ulcer has reached the stage at which the classical picture is to be recorded.

Pain is undoubtedly the cardinal symptom of gastric ulcer. When we have a pain, sharp, definitely epigastric, coming on immediately or soon after eating, and persisting until the stomach is in some way emptied, we are at once justified in thinking of an ulcer, yet far more frequently in the early stages of gastric ulcer the pain is of an entirely different sort. It does not always amount to real pain, but begins as a feeling of burning or discomfort after meals. The interval after eating, which precedes the onset of pain, is at first also more variable than later. In the chronic healing or cicatrizing ulcer the patient at the time of the examination will often give a very indefinite history of pain, as the very painful stage of the ulceration has long passed by.

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The pain therefore is a symptom variable as to duration, quality and character. We are safe in stating that some form of epigrastric pain or distress is present in every case of gastric ulcer, but often it is never severe enough to give rise to even a suspicion of its true cause.

Slight rigidity and local tenderness in the epigastrium are important signs of gastric ulcer when found in conjunction with the characteristic pain.

Dyspepsia is a necessary accompaniment of such a grave organic lesion of the stomach as ulcer. It differs in but few respects from that encountered in other forms of upper abdominal disease. Perhaps the one feature of it that might be called distinctive is the frequent maintenance of a good appetite. The patient can eat, but is afraid to because of the distress following the ingestion of food. And we often see in patients with more or less latent gastric ulceration a surprisingly well maintained standard of general bodily nutrition. The digestive disturbance in gastric ulcer is distinctly not one of enfeebled secretory activity, and hence such food as can be eaten and retained is well prepared for the further chemical changes in the gut.

Vomiting is often a symptom in frank gastric ulcer. It is dependent upon the ingestion of food and results from the pain caused thereby. In a surprising number of cases of gastric ulcer proven upon the operating table we have noted the comparative insignificance of this symptom from a diagnostic point of view. It is more often infrequent and irregular than occurring after every or many meals. Moreover, there are so many conditions affecting the stomach, both intrinsic and extrinsic, that cause vomiting, that from the point of view of differential diagnosis, it is valuable not by the mere fact of its occurrence, but only by the time of its occurrence and the character of the vomitus.

The last but in a way the most definite of all classical symptoms of gastric ulcer is hemorrhage. If we except gastric and esophageal varices and cirrhosis of the liver,

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there are practically no other conditions which give us a frank gastric hemorrhage of fresh blood in large or small quantities. Yet it is in a way a discredit that we consider *hemorrhage* as a *symptom* of gastric ulcer. It should be classed as a complication. It is true beyond a doubt that, with the exception of entirely latent gastric ulcers (and there are but few, if any, truly without symptoms), we should diagnose our stomach ulcers long before hemorrhage makes them only too manifest. Unfortunately this is done in comparatively few cases. It has not yet been sufficiently impressed upon physicians at large that serious dyspepsia with marked pain means more, in practically every instance, than a mere "gastritis," and very often it means "gastritis" due to a defect in the stomach mucosa, *i. e.*, ulcer.

The differential diagnosis of gastric and duodenal ulcer is not an easy one. The latter shows pain at a longer interval after eating, hemorrhage is rare until very late, and melena is more common. Moreover, we have more commonly in duodenal ulcer that characteristic "hunger pain" caused by excess of acid in an empty stomach and *relieved* by food.

Should a diagnosis of ulcer of the stomach be made, what must be our line of treatment? Amongst those who still follow almost entirely the medical method of treatment I can find but one man of prominence who takes an optimistic view of that method, Ewald of Berlin. The statistics and conclusions of practically every other frank observer prove conclusively that our treatment of gastric ulcer by medical and dietetic means is in the majority of instances a failure as far as a true recovery is concerned, yes, even as to the temporary alleviation of pain.

Another evidence that the ordinary treatment of gastric ulcer is unsatisfactory is to be found in the fact that we are continually hearing of new drugs and dietetic methods; the old ones would not be changed if they were satisfactory. Some years ago the Ewald-Leube method of starvation and

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liquid feeding was practised universally; now we have that of Lenhartz, which calls for immediate feeding and rapid increase in diet. The results in each are poor, but perhaps about equal. Does not that prove beyond a doubt that the unfortunate patient recovers in spite of his diet instead of because of it?

Perhaps that is putting it a little too strongly. Let us say rather that under careful diet, rest in bed, etc., only a small percentage of cases really recover under medical treatment. Patterson (1906) in an analysis of seventy-two cases treated medically found that while all had been discharged cured only nineteen were permanently well, forty-six of the seventy-two had still their symptoms, had submitted to operative treatment, or had died. So that only about one fourth of the supposed cures were cured. Murdoch reports sixty-nine per cent. of cures in a small series of cases. Still more recently Spriggs, in a series of thirty-seven patients traced, some of whom were treated by the ordinary methods and some by the Lenhartz method, found that but fifteen were well after leaving the hospital. The others still have their symptoms and their ulcerations. In the Massachusetts General Hospital, of 187 cases treated, collected by Greenough and Joslin, the initial mortality was eight per cent. Eighty per cent. were discharged as cured or relieved. After a period of five years, of 114 patients who could be traced fifty-seven had had recurrences, while fifteen additional cases had died of gastric disease, making in all twenty per cent. of deaths.

It would be useless to cite you further statistics to show that the medical treatment of gastric ulcer is not all that it might be. What then is our method of cure to be?

I am not exaggerating when I say that in surgery we find relief for most cases of gastric ulcer and for most of its complications. No one will say that our treatment is always successful, or that it is always free from risk, but it certainly gives us results far beyond those achieved by any

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medical means. In ulcer cases of recent duration it is of course unobjectionable for medical treatment to be tried. By this means a small (a very small) percentage of patients will be cured temporarily, and a few will have no recurrence of their trouble, or at least will seem perfectly well for many years.

For the purposes of the surgeon gastric ulcer must be considered from several viewpoints:

1. Gastric ulcer without active complications.
2. Gastric ulcer complicated by active hemorrhage.
3. Perforated gastric ulcer.
4. Gastric ulcer complicated by perigastric adhesions.

In simple gastric ulcer our endeavor must be, in surgical just as in medical treatment, to procure if possible such change in the secretions of the stomach as will tend to lessen both duration of the ulcer as well as its possibility of recurrence.

The operation of choice in a gastric ulcer is a gastroenterostomy—the formation of an opening between the stomach and jejunum. This accomplishes both the results desired. In some way the secretions of the stomach are changed. That is to say, if there be hyperacidity the operation causes a diminution in the hydrochloric acid which is found in the stomach, while when there is deficiency in acid the percentage rises after operation. In other words, the gastroenterostomy at once influences the gastric secretions and tends to make them more nearly normal. This has been the experience of Kocher, Patterson and others, who have especially investigated the subject.

In performing gastroenterostomy I now use by preference the posterior operation, with "no loop." The peculiarity of this operative method lies in the fact that we leave no long loop of intestine when bringing the bowel over to the stomach, and that in making the anastomosis I follow Mayo's plan, making the stomach incision incline from left

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to right, from above downwards, and of course placing it in the pyloric portion of the stomach, not at the fundus.

It must not be supposed that the operation of gastroenterostomy will cure every case of even simple gastric ulcer. Nevertheless there are great advantages in its favor. The initial mortality nowadays is very small,—probably, in benign conditions of the stomach, not over three per cent.; with many surgeons below two per cent. In reckoning the ultimate cures, it must be borne in mind that operation is undertaken usually in cases which have long defied medical treatment, or in which symptoms have recurred after more or less temporary relief from medical treatment. There are few patients operated upon who are not at the time of operation suffering from a more seriously diseased stomach than they possessed at the time medical treatment was first instituted. This being considered, it is evident that the relative number cured by operation far exceeds those cured by medical treatment alone. In my own cases, collected by Dr. A. D. Whiting, 62.1 per cent. of those traced ended in permanent cure, a far different picture, I am sure, from that which would have been presented after persistent medical treatment. The results of Kocher, Mayo and other very eminent surgeons lead to the same conclusions—that gastroenterostomy does cure gastric ulcer, and that the cure is permanent.

It is necessary here to sound a note of warning about the choice of a case for operation. It is more than important after we open the abdomen and expose the stomach to know what to do and what not to do to be able to perform the merely mechanical portion of the work. An ulcer to be benefited by treatment must be an ulcer large enough to see and feel and make itself very evident on the operating table. As Dr. Wm. J. Mayo so well pointed out several years ago, we can do nothing but harm by operating upon cases in which we suspect but cannot find an ulceration. I believe that every means should be exhausted to

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determine the true state of affairs before we actually perform an operation with a view to curing the condition. A stomach not diseased will be harmed by a gastroenterostomy, one with functional trouble only will be more harmed. If necessary we should even open the stomach and look for the ulceration, rather than perform a perhaps useless gastroenterostomy.

In certain cases of ulcer further surgery may be indicated. In other words, resection of the ulcer-bearing area is sometimes indicated. I have done such resections both in pyloric ulcer and for the cure of saddle ulcer of the lesser curvature. We cannot, of course, hope to do this when there is extensive ulceration of the fundus or of the anterior or posterior wall.

Why, if gastroenterostomy gives such brilliant results, should we do any more than this? The answer is to be found in our conviction that in very many cases of gastric carcinoma the disease takes its origin upon the site of an old ulcer. Mr. Moynihan, in a recent article upon cancer of the stomach, states that of 125 cases which he had operated on and carefully analyzed, "approximately two in every three have had a history of previous gastric ulcer." Dr. W. J. Mayo in 180 cases of resection of the stomach for carcinoma found that in 97, or 54 per cent., of his cases the carcinoma had sprung from the base of an ulcer. Mayo Robson found that 59.3 per cent. of his cases of carcinoma of the stomach operated upon gave a previous history of gastric ulcer. My own experience, though I am not able to present definite statistics, leads me to the same conclusion. There is, I think, no more difficult question for the surgeon to decide, even after the abdomen has been opened, than this question of whether an ulcer along the lesser curvature, or close to the pylorus, has already begun to undergo carcinomatous transformation. Therefore, while gastroenterostomy will cure two thirds, or even three fourths, of the cases of gastric ulcer, we make assurance

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doubly sure when we excise the ulcerated area. Little is added to the initial mortality of the operation when the gastrectomy is done by one who has had experience in the operation, and were the possibilities of cancer to be placed fairly before the patient I have no doubt that he would gladly assume the slight added risk.

While posterior gastroenterostomy by the no-loop method is the operation of choice, I have had, before I adopted this method, good results with the ordinary long loop method, when it has been supplemented by an entero-enterostomy between the two limbs of the small gut. This much diminishes the probability of a vicious circle being formed, a thing rare since the use of the short loop, but not infrequent before that. When it is absolutely impossible to approach the posterior surface of the stomach, I do an anterior gastroenterostomy, supplementing this also by an enteroenterostomy.

The technique of all these operations is that usually described, using the clamps and an inner suture of fine catgut, supplemented by an outer one of fine linen thread. There are two details in the performance of gastroenterostomy, the neglect of which may lead to bad results. The first is the making of an opening of proper size and excision of the mucosa to prevent a possible valve formation. The second is the suturing of the stomach by several fine sutures to the opening in the rent of the transverse mesocolon, so that strangulation cannot possibly occur. I also place one stitch about three quarters to one inch to the cardiac side of the anastomosis to prevent subsequent kinking of the bowel.

We have thus far treated merely of acute or open gastric ulcer in its practically uncomplicated form.

We next have to consider the treatment of gastric ulcer actively bleeding. It has been suggested that operation in these cases is indicated and that it is proper in case a vessel is bleeding to open the stomach and seize the bleeding point. It is but proper to state, however, that the results

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of operative interference in actively bleeding ulcers are very poor. As a general rule it may be stated that whatever chance of recovery such a patient has is destroyed by operation. Dieulafoy and Robson and Moynihan have recorded instances of ligation of the bleeding point, yet this can rarely be done satisfactorily. The mortality of medical treatment in acute gastric hemorrhage is low, in surgical treatment high, therefore we must leave the patient alone in order to make his recovery possible. Not only have the results of operation been poor in acutely bleeding ulcer, but in the chronic recurring form of bleeding we have had results almost equally bad. Severe recent hemorrhage is a definite contraindication to gastric surgery.

Perforated gastric ulcer must be treated by operation. Except in those rare instances of slow or subacute perforations, in which adhesions block the opening into the general peritoneal cavity, the prognosis is absolutely fatal. As perforation is said to occur in four per cent. of all cases and to cause eighty per cent. of deaths in gastric ulcer, we have here a problem of some importance. The diagnosis of this condition I need hardly dwell upon, except to remind you that after, or even during, the initial period there are a number of conditions which give similar symptoms. Thus in the absence of a definite history of the previous illness, it would be practically impossible to distinguish between a perforated duodenal and a perforated gastric ulcer, while after peritonitis has set in, beginning perhaps in the right iliac fossa by gravitation of infectious material, appendicitis would be very closely simulated.

If a patient has a perforated gastric ulcer his chance of recovery depends upon early operation. This is to say, in nearly every instance the rapid sequel of a perforation is a diffusing, then a general, peritonitis. Occasionally there may be found a subphrenic or perigastric abscess, but fatal general peritonitis will occur in 99 per cent. of cases at least. It is our duty then to operate early and to antici-

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pate the general purulent peritonitis, to prevent if possible the occurrence of a condition which, when fully under way, we cannot hope to cure. The present mortality is still fifty per cent., because the cases do not come to operation early enough. It has been found that in cases diagnosed and operated upon within the first twelve hours the mortality is twenty-five per cent., in twenty-four hours it becomes almost fifty, after the first day less than half can be saved, and after the second day less than one fourth.

When the abdomen is opened for a gastric perforation we have three indications for treatment in the order named:

1. An opening in the alimentary canal.
2. A diseased stomach.
3. A peritonitis.

The hole in the stomach should be closed by Lembert sutures, if possible, or, if this is not feasible because of the induration about it, by oversewing it with a portion of omentum. Excision of the ulcer is too extensive an operation when time is of such great value. I occasionally use, in small ulcers, a pursestring suture, reinforced by the usual Lembert stitch.

The diseased stomach should be treated at the same time, *i. e.*, we should do a gastroenterostomy in operating for perforated gastric ulcer. This both cures the fundamental condition and prevents a recurrence of the perforation. Le Conte and others think that mere closure of the opening is sufficient surgery upon the stomach, but I have always believed, with few exceptions, that gastroenterostomy should be performed, for the reasons given. With improved technique but little time need be used in its execution. The same point holds good in perforated duodenal ulcer. The peritonitis requires active treatment. Every case of perforated gastric ulcer requires drainage, whether pus be as yet present or not. I drain by a tube to the

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pelvis, through a suprapubic stab, and close the upper wound. Otherwise I treat every case along the lines indicated in the treatment of a general peritonitis, no matter if it has not yet progressed to that stage. The patient is sat up in bed, food by mouth is withheld for forty-eight or even seventy-two hours and enteroclysis by the continuous method is used. The results have been good, as I have had six cases with no deaths, my assistant surgeon; Dr. A. D. Whiting, having operated upon one of these.

There still remains for consideration under the heading of gastric ulcer that class of cases associated with extragastric conditions. These are comparatively few in number, but furnish some of our most important cases and our most satisfactory ones. The release of the stomach from its adhesions, together with treatment of the primary condition by the usual methods, is indicated.

In association with gastric ulcer we still have to consider two conditions, in which dilatation of the stomach plays a cardinal part, and the formation of hour glass stomach.

Dilatation of the stomach in ulcer may be due to a pyloric stenosis or due to pylorospasm caused by the ulcer, but without direct mechanical interference with the pylorus.

Where we have an actual stricture at the exit of the stomach a gastroenterostomy will be of the greatest value. It drains the stomach and relieves the toxemia caused by stagnation. In a certain proportion of these cases Finney's pyloroplasty will give excellent results, especially if the stomach is not greatly dilated and still retains the tonicity of its walls, but I consider gastroenterostomy, with or without resection, as preferable. When the dilatation is due to a reflex pylorospasm due to ulcer in the pyloric region of the stomach, operation directed to the cure of the fundamental condition always gives brilliant results.

When we have the formation of an hour-glass stomach due to ulcer, either resection, gastrogastrostomy, or gastro-

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plasty, in conjunction with gastroenterostomy, is indicated, and is to be preferred to the performance of a double gastroenterostomy draining each pouch.

Before considering the other great divisions of gastric disease, it will not be out of place to mention briefly several other gastric conditions occasionally seen by the surgeon. I have already mentioned the necessity for the avoidance of operation in neuroses of the stomach—that is to say, of avoiding operations upon the stomach itself. It is, however, true that many a case of gastric neurosis, so called, can be cured by surgical interference in other portions of the abdomen. In a recent paper I have attempted to show how rare an independent gastric neurosis is. I have seen many instances in which marked gastric symptoms alone denoted the presence of gallstones, pericholecystic adhesions or a chronic appendicitis. It is well known that biliary calculi often make their presence known by symptoms of indigestion only, and we must be on our guard against overlooking them. Occasionally a resultant secondary gastric neurosis takes the form of a pylorospasm or spastic condition of the pyloric sphincter, which may in every way simulate pyloric obstruction, or merely have pain in the pyloric region, etc., as its most salient features. I have lately observed a number of cases of chronic appendicitis, in which all the symptoms were referable to the upper abdomen and were promptly relieved by appendectomy.

Cardiospasm, analogous to pylorospasm, is less well adapted to surgical cure. It must be treated by bougies and dilators, and only as a last resort should we open the stomach to divulse the cardia.

Closely allied to dilatation as a result of pylorospasm, or secondary to other intra-abdominal disease, is gastrectasis, a dilation of the stomach. Generally it seems to be independent of any lesion beyond the stomach, though often found in patients otherwise debilitated. The stomach

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loses its elasticity and muscular power though the pylorus remains patulous, and generally becomes dilated, flabby and powerless, the seat of stagnated food and fermentation. Results in these cases, as far as can be stated from my experience, are perfect in every instance, the relief being secured by gastroenterostomy and drainage of the stomach.

In gastroptosis, on the other hand, operation gives little or no relief. The condition is but a part of a general visceroptosis and is better treated by an appropriate belt for the local condition, supplemented by general treatment for the accompanying neurasthenia almost invariably found. Particularly do I disapprove of operations attempting to hold up the whole viscus. They are almost invariably failures.

Of acute dilatation I may say that I have never encountered this condition, either post-operatively or otherwise. I believe this is due to the fact that I always use early and frequent lavage in persistent ether vomiting or food accumulation.

All the benign diseases of the stomach combined, however, give rise to fewer fatalities than those attributed to gastric cancer. Mr. Moynihan, in commenting upon the 1,500 deaths a year from this disease in England alone, states that "the cases that we have cured are so few as to be almost negligible." Unfortunately this is true, and so far we have made but little progress in this grave condition. In spite of improved technique and low initial mortality our end results are still of the worst. It is not difficult to understand why this should be so. It is principally because the disease is not diagnosed early enough, and but too often cannot be in the present state of our knowledge.

Carcinoma of the stomach is, as are malignant growths in other parts of the body, at first purely local. In over three fourths of the cases it is situated near the pyloric end of the stomach, where it is favorably located for excision.

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Our endeavors to effect a greater number of cures must lead us in two directions,—prevention, and early diagnosis and operation.

Prevention of gastric carcinoma is possible in but one way. We have seen that two thirds of all cases of cancer of the stomach are engrafted upon old ulcer of the stomach. If then we so educate ourselves and the medical profession that these cases are not temporized with, but are sent promptly to the surgeon, when a diagnosis is fairly definitely settled, we shall have taken a great step towards lessening the incidence of cancer. As I see more and more of these cases, I am continually impressed with the causative relation between cancer and ulcer of the stomach. Even in those instances in which we can get neither a history of antecedent ulcer nor demonstrate its previous existence by microscopic means, it is not improbable that it has been the basis for the neoplasm.

So far as we know, in the cures of gastric ulcer we have exhausted our means for the prevention of gastric carcinoma. The next question that confronts us is that of early diagnosis.

Early diagnosis in gastric cancer, as in all other forms of upper abdominal disease, is difficult, at times impossible. At the outset let us throw aside as a basis for diagnosis the classical picture of gastric malignant growths as pictured in the text-books. They give us cachexia, retention vomiting, signs of a gastric growth. Associated they are not symptoms of gastric cancer but of its long continued neglect, evidences that it has been allowed to progress to the incurable stage. Doctor Crile of Cleveland in a recent article expressed the hope that cachexia and glandular enlargement would soon cease to figure in the text-books as symptoms of cancer. In gastric cancer we can substitute palpable tumor and retention vomiting for glandular enlargement.

To diagnose a cancer of the stomach early in any in-

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stance we must pay attention to what Mr. Moynihan has called the "inaugural symptoms." When in a patient beyond or even under middle life, especially if he has had a history pointing to gastric ulcer, we find the onset of a dyspepsia or even an aversion to food, associated with gradual loss of flesh and slight anemia, we are well justified in at least beginning to suspect some malignant change. It is of course true that gallstones, duodenal ulcer, and even pancreatitis, at their very outset give rise to a dyspepsia very similar to that found in disease of the stomach itself. The differentiation is extremely difficult, it is true, but the further progress of the illness may soon show it in its true colors. The patient becomes gradually a little languid and weak, his aversion to food may take the form of a dislike for special articles, particularly, as Kocher has pointed out, of meat. The blood count drops, the color index being low. The leucocytes may show a slight polynuclear increase. The patient complains of distress in the epigastric region. Indeed, "the common symptom of cancer of the stomach is pain" (W. Hale White), and we should be doubtful of our diagnosis if it be not present in some form. Often it is not described as pain. The complaint is of a pressure or heavy feeling in the stomach, or of a sensation after eating as if the food did not leave the stomach. As the disease progresses the patient becomes thinner, weaker and more anemic; his gastric symptoms increase and the eructations of gas become more frequent, and there may be added occasional vomiting. When the disease has reached this stage we are justified in opening the abdomen. To wait until a diagnosis is certain is to sacrifice all chance of cure, generally even of temporary benefit.

When the disease has progressed so far that a tumor is palpable the prognosis is very grave, and the same may be said of retention vomiting. It is not often that we have vomiting as an early sign, except in those cases in

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which, fortunately, the pylorus is occluded very early. I say fortunately, for when the stenosis is rapid and marked the growth may still be intragastric, as was the case in a woman upon whom I operated several years ago and who is still entirely well.

There is no excuse for failing to note retention of food until we have retention vomiting, for we are able accurately to determine the motility of the stomach by means of a test meal, removed after a certain period of time, preferably a full meal taken in the evening and washed out in the morning.

This brings us to the question of gastric analysis. Heralded some years ago as a certain means of diagnosis, the gastric analysis is nowadays, as far as a diagnosis of organic disease of the stomach is concerned, absolutely worthless. The absence of free hydrochloric acid was looked upon as a deciding point in favor of carcinoma of the stomach. It is in this disease but a sign of stagnation and fermentation, a late sign. The acidity is but slightly altered in early carcinoma, and we frequently have anacidity in another common disease of the upper abdomen, *i. e.*, gallstones. Moreover it has lately been pointed out that carcinoma in other portions of the body may markedly diminish the free hydrochloric acid in the stomach.

Hale White lays stress upon the X-ray examination of the stomach, after the ingestion of bismuth, to determine its size and pyloric patulousness. My own experience with this method of examination is limited, but with expert radiographic work it might be valuable.

We see then that early carcinoma of the stomach is extremely difficult to diagnose. We can almost coincide with Mr. Moynihan in his plea for more frequent "exploratory operation," or, as I would prefer to call it, "early operation for upper abdominal disease." At the stage in which cases reach us now our task is almost always hopeless.

At times pylorectomy, or, better still, partial gastrectomy,

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is possible, in conjunction with a posterior or possibly an anterior gastroenterostomy. The mortality of this operation is about four to twenty per cent. in the hands of competent operators. Not a low percentage. But of the eighty per cent. who recover, temporarily at least, a few will be permanently cured. Of course the operation can be successful only if the whole growth, with the possibly involved glands, can be excised. The existence of extensive glandular metastases along the borders of the stomach bodes ill for the patient, even if all the supposedly involved glands can be excised. When an excision is done I prefer to do this before the gastroenterostomy, for the amount of stomach removed will govern the length of the loop and the location of the gastroenterostomy opening. I also always do the two operations at one time. The operation in two stages exposes the patient to two etherizations, and after his first improvement following the gastroenterostomy often he cannot be gotten to submit to a second operation.

I consider partial gastrectomy superior to the old method of pylorectomy, removing that portion of the stomach lying between the first part of the duodenum and a line dropped perpendicularly from the cardia to the greater curvature.

When only a gastroenterostomy can be done it often relieves the patient wonderfully, particularly, of course, if there be pyloric obstruction. It saves them at least from death by starvation and gives them the ability to eat if not to assimilate food. As compared to gastroenterostomy plus excision it is a poor makeshift at best.

The after treatment of all stomach operations for carcinoma, as well as for benign conditions of the stomach, is simple. The patients sit up in bed from the start to secure better drainage of the stomach, and primarily for the avoidance of possible lung complications, which, after upper abdominal operations, have in the past not been un-

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common. No food is given for twenty-four to seventy-two hours, liquid diet is given for about eight to ten days, and at first, if necessary, nourishment is given with the routine saline by the bowel. Early and frequent lavage is the only treatment for post-operative vomiting that avails anything. I get my stomach cases out of bed early and believe they are benefited by this method.

In all benign cases I believe that proper medical treatment, diet and hygiene are of importance after operation. This is the best time to obtain good results from medical treatment.

In conclusion we can sum up the present situation in gastric surgery as follows:

1. The treatment of ulcer surgically is highly satisfactory, but not perfect in its results.

2. With less danger in operating because of our present improved technique, excision or resection of gastric ulcer will probably become out more frequent.

3. Chronic dilatation of the stomach is curable by gastroenterostomy, whether the pylorus be patulous or not.

4. Gastroptosis does not respond to surgical treatment.

5. Neuroses of the stomach are fit for surgical treatment only when their cause, being without the stomach, can be removed. Operations on the stomach for functional gastric conditions are always failures.

6. Carcinoma of the stomach in many instances would be curable if diagnosis could be made early. Until our diagnosis is improved our results will continue to be poor. Unless we explore earlier and *more* often and not consider the responsibility of such procedure a grave one, we cannot hope to progress in the surgery of malignant growths of the stomach.

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DISCUSSION.

DR. M. E. KEAN, MANCHESTER.

After listening to the very comprehensive paper of Doctor Deaver, you will all agree that it does not give very much chance for discussion, as he covered the ground very carefully. There are some things I thought of when he was reading the paper. One, the grouping of ulcers in different parts of the stomach; that of perforative ulcers at least twenty per cent. are multiple; and that diseases of the gall bladder simulate gastric disease, and that sometimes the patient may have pain, low blood and all the other symptoms, minus the hemorrhage. I noticed he did not speak of putting any drain in when adhesions were broken up. We very often do that; it is important. As to his various operations for gastric ulcer on different parts of the stomach, of course the belief that eighty per cent. of these occur in the pylorus is being gradually abandoned. Most of us are coming to the Rochester method of doing partial gastroenterostomy. The problem, it would seem after listening to the doctor's paper, would be to evolve some plan of early diagnosis, which, as he states most clearly, is very difficult, so that the patient, without being treated for a period of a month, could be operated upon when there was a good prospect of cure; but in the end the results are bad, for the simple reason that the patient is brought to the operating table too late.

DR. F. B. LUND, BOSTON.

Within the last two years the subject of gastric surgery has developed immensely. It is a subject of the greatest interest and has been presented to you today in a masterly manner, not only from the marked common sense with which that paper is filled, but the incisive and definite way of its presentation. Doctor Deaver has covered a

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great deal of ground by touching on the high points, and I can only think of a few things that I wanted to emphasize. In the first place our diagnosis by laboratory methods. I have tried particularly hard to get some help from laboratory men. A good many cases have been sent to me by physicians as early cases of stomach disease, and I felt I ought to have a careful laboratory examination made. Two recent experiences have come to me, both young men, one working on the electric cars and the other out of a shoe factory. Both were at work and were sent to me with reference to stomach disease. Both of them looked the least bit anemic; both had gastric pain. A laboratory examination in both those cases showed no blood, showed the stomach emptied itself perfectly well at all times and showed there was no interference with the gastric secretions.

In one a cancer involved almost the whole stomach; it was absolutely out of the question taking it out. There was not room enough to do gastroenterostomy. The other had cancer also. Now when a good man sends a patient to me and thinks he has trouble with his stomach, I am not going to waste very much time, for those are only two recent cases out of many which demonstrate that we must depend upon the common sense of the doctor who has seen the man and knows him, and the stomach trouble does not get well under his treatment. The surgeon who sees him for the first time has to depend upon the physician. Doctor Deaver has said the responsibility is not great. It is not. Still, nobody likes to cut into a patient and find nothing the matter. I don't like to, although I know there is very little danger, but there is detention from work, loss of time, and a general feeling of having gone off on a fool's errand. Acute ulcers, I believe, are common in young women. They do not usually become chronic until later in life, and I believe acute ulcers in young patients ought to have treatment. A great many of them will be

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cured without operation if the medical treatment is kept up, but it frequently is not, and they will come back to the surgeon. The medical treatment is difficult and has to be long continued. Now Doctor Deaver has taken up the subject so well of operating on gastric neuroses there is nothing more to be said. As stated, the ulcer must be large enough to see and feel. To my mind we have admitted that we are not very much helped by analysis. And Doctor Deaver has said another thing which is very true—that after you get the abdomen open you cannot always tell whether you are dealing with a gastric ulcer or functional trouble only, and a great responsibility is therefore laid upon the surgeon. We know the majority of ulcers are cured by gastroenterostomy. It is a simpler proceeding than resection. Therefore, in cases where resection would be very difficult, even if an ulcer is old, we would better be content with gastroenterostomy. And we will find a great many cases, especially those close to the pylorus, will get well with that simpler proceeding. I believe we will more and more do away with resections. I have had in the main good results in resection of the stomach, although I have recently had one unfortunate experience. My best case of cancer lived three years and had three years of perfect health, and that seemed to be worth while. Others have had excellent health for a year or more after the operation. In regard to resection for chronic ulcer, we have to consider to a considerable extent the fact that we are advising a major and more serious operation as against a simpler one, which very often cures the disease. I do not agree with Doctor Deaver on one point. That is, his statement that gastroenterostomy should be performed at the time of acute perforation. I think you had better get out of that as quick as you can. I have performed gastroenterostomy with two cases of rupture under those conditions, but in the majority of cases I have not done it, but waited to see if the ulcer is helped by the first operation. I was very much impressed with what Doctor Deaver said in connection with the medical treat-

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ment of these cases. In regard to the early diagnosis of cancer, in a great many cases it cannot be made, and the responsibility with us is to limit that number to as few as possible.

DR. FRANK BLAISDELL, GOFFSTOWN.

My great interest in Doctor Deaver's paper lies in the question of diagnosis, and his idea of diagnosis has been a great help to me. I got up for the sake of telling how glad we are a man so distinguished as Doctor Deaver is willing to sacrifice his time to come on here, a man who has written the best book on anatomy I have in my library. We should feel more than grateful. We are proud that such men as Elliot, Cheever, Gay and Lund are New Hampshire men, and are very glad that Doctor Lund, who has had so much experience in gastric surgery, should be here to discuss the questions brought up by Doctor Deaver. But, as I say, I rise more particularly to say that Doctor Deaver has given up his time to come on here for two days to discuss these questions, which has helped us out wonderfully—a wonderful help to us, and I feel like spending all my time in praising Doctor Deaver.

DOCTOR DEAVER.

I have not a question of doubt that we are all of one opinion relative to the important subject mentioned in this suggestion. I believe in the operating table in certain conditions and think we would all decide alike. Of course, my paper did not cover every point relative to multiple ulcers, relative to the oozing, etc. I refer more particularly to the advanced stages of peritonitis. I was glad to hear from Doctor Lund that he had not received any more aid from chemical findings than I had. I find more aid in chemical than organic. In the question of gastro-enterostomy I realize that I stand not alone, but pretty nearly alone. I frankly own that all of my cases have not

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been successful, but many have recovered. That has much to do with a man's methods often times. There is no question about that. I agree fully with Doctor Lund that under some conditions it would be foolish to cause the patient any additional risks. I had one experience in particular where the patient died and I felt pretty heartsick over that. On the other hand, I have seen cases where ulcers the size of my fist were, through gastroenterostomy, reduced within a month.

On motion of Doctor Kean, a vote of thanks was extended Doctor Deaver for the complete and comprehensive paper presented by him.

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Address by F. E. Kittredge, M. D., Nashua, to the Graduates of Dartmouth Medical School, March 26, 1909.

I come before you today to speak of the life of the medical practitioner and to offer suggestions for your future guidance, with a keen sense of my own shortcomings and limitations. It seems not a long time ago since I sat in the same position in which you are today, though in another institution. Twenty-four years have elapsed since that date,—a long time in anticipation, but a short one for retrospection. I entertained the same hopes and fears for the future that are undoubtedly with you, and as I think of that time, I believe the sense of fear predominated.

It has been rather difficult for me to decide upon a subject to address you. Unlike our friends, the clergy, we cannot open the Good Book, select a verse of scripture for a text and discourse upon any line of thought that may suggest itself. Our text must be strictly original, and I think I will call mine "The Pleasures and Disappointments of a Medical Career, or Random Thoughts from a Doctor's Experience."

You are to be congratulated in having chosen for your life's work a profession, the practice of which is capable of rendering to its devotees almost unbounded pleasure, provided your choice has been made because of expectation of love for the work, and not simply as a means of a livelihood. To the former, while its disappointments may be many and at times seemingly deep, its pleasures will far more than compensate, for it is a profession giving to its

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practitioners a wide variety of work, and constantly new subjects for thought. To the man who loves the work it should never be drudgery, and there is seldom an excuse for him to be routine in his practice.

Man is capable of making an infinite variety of objects in many different ways, but no one object of them all, or all combined, is fashioned in so great a variety of ways as is man himself. No two individuals are reproduced exactly alike. Bertillon, in his system of measurements, has shown that in the size and shape of the bony framework of man, his fingertips and hands, and the lines upon them, there are no two exactly alike. Is it not reasonable to suppose that there is an equal variation in their internal organs and in the governing centers responsible for the harmonious action of all parts of one's anatomy?

Not only do men differ physically but mentally, and as the mental condition is frequently responsible for the physical ailment, the medical practitioner is continually meeting new conditions in the treatment of the same disease, thus ever finding a fresh interest to engage his earnest attention.

You will not be in practice long ere you will learn it is more frequently the individual you are called upon to treat than a disease. In a large number of cases demanding your attention there will be no definite change of structure. As Frederick Shattuck has said, "Disease, discomfort, there may be, due to impaired function, behind which there may be a faulty mode of life, a false attitude toward life, or a mental or a moral maladjustment to surroundings." Human nature you will find to be always the same, everywhere and at all times. Whether you practise in country or city, your experience will be very much the same. The same encouragements and discouragements await you all. You will experience the sense of pleasure that Mr. A's family is one of yours after attending them for a time through one or more sicknesses, and also the

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feeling of disappointment and wonder when some kind friend feels it a duty to inform you that a competitor has taken your place.

More than any one thing, as a cause of unhappiness to the medical man, I believe to be the habit many families have of changing their physician, and it is something to which you will all have to accustom yourselves. Those for whom you have seemingly labored the hardest, whose troubles are with you through the wakeful hours of the night, and for whom you have conceived an interest second to none but your own family, these will at times desert you for another.

Your feelings will be not always wise to express, but if you live to practise many years you will find very frequently they return, provided, of course, you have given them no just cause for the change. On the other hand, there will be families who will stay by you year after year, whom you will learn to know and love, whose joys will be yours and whose griefs will cause you suffering,—families whose confidence in you will ever be a source of pleasure and encouragement, and whom you will value highly, not for the money they may bring, for many of them will be poor and can give you little or nothing, but for the knowledge of their implicit trust in you. These cannot conceive how much they contribute to the doctor's happiness, nor do they realize the better service they receive from him in times of need, for he is not only with them at his daily visit, but they are in his thoughts much of the intervening time.

Kipling says, in his address to a class of physicians: "The world decided long ago that doctors have no working hours that anybody is bound to respect. Nothing except your bodily illness will excuse you, in the world's eyes, for refusing to help mankind at any hour of the day or night. In your bed, bath, or on your holiday, if any of the children of men have pain or hurt, you will be summoned; and

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what little vitality you have accumulated in leisure hours will be dragged out of you again. At all times, in flood, fire, famine, plague, murder, and sudden death, it will be required of you that you should report for duty at once, to go on duty at once, and to stay on duty till your strength fails you or your conscience releases you, whichever may be the longer period."

Not only is the above true, but it must ever be borne in mind that the call at 2 a. m. must be answered as cheerfully as at 2 p. m., even though it proves to be unnecessary.

Nobody has ever proposed to unionize the doctors to the extent of restricting them to an eight-hour day.

> At no certain hour can you call your day's work done,
> For at 12 a. m. it may have just begun.

You will, at times, find yourself in competition with those who claim to know by intuition everything and more than you have learned by long years of study. Any argument upon your part would be termed prejudice, hence it is usually best to let the quack have his day, well knowing that, at the longest, it will be a short one. And as for the many fads and "isms" that apparently flourish about us, do not let your heart be troubled. A class of people usually test them all but finally return to the doctor in real time of need. There have been quacks and faith curists as long as there have been legitimate physicians, and there probably always will be, but our work advances and will advance to the end of time; for however much science may accomplish in eradicating disease by educating people how to live, it will ever be true that no more can be got out of a machine than is put into it. If overworked, some parts are sure to loosen, and if the father will eat of forbidden fruit, the children's teeth are very likely to be affected.

You are about to enter one of the two great classes of mankind, to quote again from Kipling,—doctors and patients. The first of these classes you have chosen, and

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may it be seldom you will ever enter the second class, that of patient, though I have sometimes thought it might be well were every doctor to undergo some severe illness during his professional career, that out of his personal experience he would the more readily realize and sympathize with the suffering of others. You are to enter the great postgraduate school of the physician, from which you may die, but never graduate, that of the practice of medicine. You will now begin to apply that which you have been taught, with the aid of "that great teacher—direct responsibility," so called by Frederick Shattuck.

A few suggestions from one who has traveled the road may not come amiss. I assume you will commence your work by taking up general practice, either directly or following a year or more in some good general hospital. Those of you who can possibly follow the latter course should do so by all means, for its benefits will remain with you as long as you practise medicine and surgery.

I believe it to be usually a deplorable mistake for a young man just graduating from a medical school or a hospital interneship to enter immediately upon a line of specialism. Far better is it for him to broaden himself mentally and therapeutically by devoting a few years to general work. He thus lays a solid foundation for future specialization, and prevents a narrowness of vision that must otherwise be a frequent result. It would seem to me the only exceptions to the foregoing would be in the case of those men who have enjoyed long terms of service in large general hospitals. I think even they might be a little better for some outside general experience. It is a fact that the specialist, without the general practitioner's experience, has deprived himself of many of the pleasures of the practice of medicine, as well as the hard knocks. The one is as necessary as the other in the moulding of character and the rounding of one's career.

It is rather difficult to define the personal elements

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necessary in the making of a good physician. In general terms, those traits in a man which compounded give to us the ideal citizen are the ones necessary for the achievement of the highest kind of success in the career of a medical man, assuming, of course, that he starts out well equipped with professional attainments.

The first essential element of success is character. It is an indefinable something that will impress itself upon those with whom you are brought in contact, and it is sure to command respect. It means dignity in its best sense, not unnaturalness or stiffness, and it will hold in check too great familiarity upon the part of others. It implies honesty, not only in dealing with mankind, but with yourself. Far better to confess "I do not know," when asked some question about the patient, than to say "I do," when your actions and manner prove you do not. "The wisest are the least sure, the fool has no doubts." People are too intelligent to expect their doctor to know everything without time for thought and research, and respect the man with courage to confess ignorance. When that man claims to know a thing, they believe him, knowing the character of the man. Character necessarily means good habits, and without these no one can long succeed. Be honest with your patient when tempted to advise an operation, and let no thought of a possible fee influence your judgment—something which, I believe, seldom occurs.

Be sure you are thoroughly competent before attempting any surgical operation of a serious nature, when some one better qualified can easily be secured. Major surgery means great responsibility, a fact that should always be realized, and to me it is appalling when I hear of some young doctor, but a comparatively short time out of a medical college, with no adequate hospital experience, entering the abdomen. How little they realize conditions they are liable to encounter, or how indifferent to the welfare of their patient!

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The highest function of a surgeon is to make an accurate diagnosis. Unskillful in that respect, he is an unsafe man. Nothing but bedside experience, long continued, together with a faculty for accurate observation, can make any man a good diagnostician.

Dr. D. Hayes Agnew, than whom there was no better surgeon of his time, and a teacher whose clinics I had the pleasure of attending as a student, used to say, "A good physician may make a good surgeon, but a good surgeon must be a good physician."

Bernays writes, in an excellent little book entitled "Golden Rules of Surgery," "Remember that the abdomen has become the favorite field for the operator who doesn't know much about anatomy. It is so easy to remove certain little surperfluous or troublesome organs. Beware of the pelvic surgeon 'Limited.' "

The public is not competent to judge a man's surgical ability. They simply take note whether a surgeon's patients usually get well or die. The fact that most of them live is no criterion as to the skill of the operator. My observation is our bodies are capable of standing a great deal of surgical abuse. The test of skill is ability to operate with rapidity, thus avoiding unnecessary shock, and long continued absence of unpleasant complications or sequelæ.

Be charitable, not only as to the giving of your time and efforts, but be charitable in thought. The moral and mental weaknesses of others are frequently exposed to our views.

Rather encourage to better things than to condemn past misdeeds. You will frequently be called to give your services without any hope of recompense. The fact that the poor do not hesitate to call upon you should be one of the greatest pleasures in the practice of your profession.

Tact, one of the most useful attributes one can possess in any walk of life, is of the greatest help to the physician, and your ability to travel through this world with ease will

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largely depend on whether you possess or cultivate this quality. Not only is it highly important in your dealings with your patients, but it is equally so in intercourse with your fellow practitioners. Wherever you may locate, try to cultivate their friendship. Think not that they will look upon you as an interloper, for by so doing you will deceive yourself. If in a small town, call upon the older men, and never fail to remember they have that which you have not—experience. There are those who are ever ready to attempt to make trouble between doctors. Do not believe all you hear, and tell not all you believe.

Be economical in the use of words, ever remembering that unspoken thought cannot cause trouble, and that silence frequently gives to one a reputation for wisdom. Far better to look wise and say little than to talk much and regret.

Thoroughness in one's work is an attribute peculiarly necessary to the successful prosecution of the practice of medicine. The time has long gone by when a fine presence, with the addition of a certain amount of bluff and a small degree of knowledge, was sufficient to secure and hold a practice. The general public is becoming educated in matters medical, more and more every year, and very quickly detects the man of superficial attainments.

Read well and study hard, especially during the first few years of your practice, presumably when you will have the time. Later, when busy, it will be more difficult to do. Treat every case that comes to you as if that case were the only one on record. Examine well, both in an objective and a subjective way, and give the facts gathered careful thought, ere your diagnosis is made. The man capable of making a good diagnosis has far more than half attained success. The treatment is comparatively simple, and let me advise that you keep a full record of all your cases from the start. You cannot begin to know the help it may be to you later in life. When I began the practice

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of medicine, record-keeping was a very rare thing with the general practitioner, and I have no recollection of its being even suggested. Many a time have I regretted the fact.

Having marshaled your facts in a given case, apply the rule of common sense, and forget not that you are to treat an individual as well as a possible disease; frequently the latter will be wanting. By far the greater number of cases you will be called upon to treat will be functional in character. Someone has said that castor-oil would cure three fourths of the cases a physician was called upon to treat. I do not know as to the correctness of the figures, but I do know that castor-oil is a valuable aid to the doctor. "A clear vision and an orderly mind are not given to all in the same degree, but I am sure that they are cultivable and the problem for each of us is to make the most of himself." In the summing up of your cases, it is better to be short on theory and long on common sense than the reverse.

Be particularly thorough in your examination of the lungs. Familiarize yourself with the sound of the healthy lung, and seize every opportunity for chest examination. To the physician the organs of respiration are the most important of all the organs of the body, for they are the most frequently diseased. Tuberculosis of the lungs is insidious in its approach, is easily overlooked in the early stages, and continued life to the victim is often dependent upon recognition in its incipiency. Always insist upon complete disrobing of the chest previous to an examination, for in no other way can one be thorough. Examine the entire lung, both front and back, with the utmost care. In most acute diseases, pneumonia is a frequent complication and should be constantly watched for. Its site is usually in some posterior portion of the lung, often at the base; therefore do not neglect repeated ausculation in that region. Equally important is it to watch for heart lesions,

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not only for the patient's sake, but because it is somewhat humiliating, in case a consultant should be called to see your case, to have him make such discoveries previous to your doing so.

Be sympathetic with those whom misfortune has placed in your care. Cultivate the power of putting yourself in another's place, and try to look at affairs from his point of view. Do not make light of slight symptoms, dismissing them with a wave of the hand. They may be warnings of more formidable ones to appear later, and always remember what may seem insignificant and of no importance to you is frequently a heavy weight upon the mind of the sick one.

In securing the history of a given case your patience will often be tried and you will find, as a distinguished confrère writes, "that the talk of some people, not always females, like the brook, runs on forever, though, unlike it, gets nowhere." Tact and skillfullness on your part will soon bring order out of chaos, together with the desired facts. No sensitive feelings will have been jarred. "Politeness is one of the best investments known; it pays enormous dividends."

Do as much good as your medicine. Be an optimist, not only as regards the welfare of your patient, but be an optimist in general. Cultivate the habit of looking upon the bright side of affairs. You may, you will, meet with many annoyances and some misfortunes, but however many they may be, do not be a pessimist. No man ever accomplished very much in this world with the feeling that everything would finally go wrong.

No one needs to carry the air of happiness and hope any more than does the doctor. His visit is, to the patient, the important event of the day and should carry with it the ray of sunshine ever needed in the sick-room.

Cheerfulness upon the part of the physician and the expression of confidence as to the ultimate recovery of the

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sick one, be the disease of mind or of body, will not only render the desired result more certain, but will hasten the day. Call it mind-cure or any one of the various names popular at the present time for mental healing, it does not matter what, but the practice of mental therapeutics is undoubtedly a power for good, and an agent that any optimistic physician can unconsciously apply.

"Give shrewd common sense to your work, put hope and faith into the heart of your patient, which will help him to help himself, and do not expect too much from human nature."

Guard well your health, for upon its preservation your success will certainly depend, and I would advise you not to deny yourself a vacation at least once a year. You all know the old saying, "All work and no play." This applies to physicians, and no class of men more need a vacation at times. Take one about the same time every year. Your patients will soon learn to expect it and will find no fault, nor will you lose them as a consequence.

You may readily wonder, from the length of the sermon, if the writer has practised all the virtues suggested to you, or if he thinks himself possessed of all the qualifications mentioned as desirable in the make-up of a good physician. By no means does he think so, and it may be that some of these thoughts are prompted by a knowledge of his deficiencies. Years of experience teach the physician many things, and not the least among them is the fact of how much there is to learn, and how very little he really knows.

I thank you all for your kind attention, and to you of the graduating class, now members of my profession, I wish you plenty of work and the good health to enable you to accomplish it.

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Primary Carcinoma of the Appendix.

(With report of a case.)

Pray Prize Essay.

GEORGE S. GRAHAM, M. D., HANOVER.

During the last few years there has been a marked change in our views as to the relative frequency with which primary carcinoma may appear in the vermiform appendix. Once regarded as one of the rarest seats of primary neoplasm, the appendix has now been shown to be a frequent site of such disease process. Each year brings additional numbers of observations upon the condition, so that it can no longer be regarded as a surgical curiosity. The lesion presents, however, several problems, and in view of the present uncertainty as to its significance, it is believed that the following report of a case, together with a short review and discussion of the cases in the literature, may not be without interest.

CASE REPORT.

V. B., female, aged twelve years, entered the hospital under the diagnosis "chronic appendicitis." She was a well child, who had escaped most of the contagious diseases of childhood. During the last year she had had five attacks of acute abdominal pain, with tenderness in the lower right quadrant, nausea, and vomiting. These attacks ran a course of from two to six days. The last occurred ten days before admission.

Physical examination was negative excepting for tenderness to pressure over McBurney's point.

The diagnosis of chronic appendicitis was confirmed on

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the basis of the history and the persistence of local tenderness, and the appendix was removed. It was found to be buried in intestinal and omental adhesions, which bled freely when separated. The wound was closed by layers around a small gauze drain. Recovery was uneventful.

PATHOLOGICAL REPORT.

The appendix is 5.3 cm. in length. Its serous surface is roughened and partially covered by a hemorrhagic exudate. This is especially abundant over the middle and distal portions. The diameter is .6 to .7 cm. Beginning .8 cm. from the distal end there is a rather sharply marked swelling of firm consistence. This is 1 cm. long and .9 cm. in diameter. Upon section the proximal and middle portions of appendix show slightly thickened walls; the mucosa is grayish and marked by occasional ecchymotic points. In the swollen portion above mentioned the lumen appears to be filled by a yellowish tissue, with faint linear markings upon its cut surface, and of firm consistence. About this is seen a narrow zone of grayish tissue, while about this, in turn, are the muscular and serous coats, the latter showing a slight layer of exudate. The distal .8 cm. of the appendix shows an unobstructed lumen.

Sections were made from a number of places in the appendix. Those from the proximal portion show a slight thickening and increased density of the submucosa, with an infiltration of all the coats by a moderate number of small round cells and eosinophiles. The subserosa is slightly edematous and contains phagocytic cells laden with brownish granules of blood pigment. There are also pigment particles lying free in the interstitial substance. The mucosa shows nothing beyond the leucocytic infiltration. Sections taken from the tumor area show the lumen filled with numerous columns and islands of epithelial cells enclosed within delicate fibrous tissue trabeculæ. This fibrous tissue is continuous at its periphery with the submucosa.

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The epithelial cells are small, usually rounded, with deeply stained nuclei and only a narrow surrounding zone of cytoplasm. There is no attempt at lumen formation in the cell cords. The cords are separated from their enveloping trabeculæ by a narrow peripheral space, apparently produced by shrinkage. No mitosis is found. On the mesenteric side the cell columns are found advancing outward in the connective tissue supporting the larger vessels entering and leaving the appendix, and in the lymph channels of this region. They are found also extending along the lymph spaces from the submucosa into the muscular walls, especially on the mesenteric side. Here they appear as delicate parallel columns, extending radially between the columns of smooth muscle cells. They have reached the subserous layer in several places, and one collection is found in the proximal portion of the mesoappendix.

In addition to the cross sections, longitudinal sections were cut in such a way as to include the edge of the tumor mass together with the adjoining tissue. In such preparations the various structures of the mucosa are well preserved, excepting at that end showing tumor growth. Here the tumor first makes its appearance as a submucous mass, elevating the normal mucosa. Successive sections show an enlarging tumor, which pushes the mucosa above it until the latter meets that of the opposite wall, and largely disappears. As the tumor mass grows, it advances as though from below among the crypts of the mucosa. These latter survive in a few scattered places, where they appear as though embedded in tumor tissue. No connection can anywhere be traced between the epithelium of the crypts and that of the tumor masses. The tissues of the coats surrounding the tumor show slight small round cell infiltration, this involving the serosa and the mesoappendix.

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PATHOLOGICAL DIAGNOSIS.

Primary Spheroidal Cell Carcinoma of the Appendix.

In view of the several points of clinical and pathological interest afforded by the case, reference was had to previous cases recorded in the literature, and it was found that the condition is by no means rare.

Interest in the occurrence of tumors primary in the appendix may be said to date from 1903, in which year two American writers, Elting and Moschowitz, published excellent papers upon the subject, while in the same year Letulle reported from France the first two cases to be observed in that country. Two years later Rolleston and Jones published a very careful review of the previous literature, collecting in all sixty-two cases, of which they were able to accept forty-two as undoubted examples of primary malignant disease. Of these thirty-seven were carcinoma, three endothelioma and two sarcoma. They called attention to the increasing frequency with which these tumors were being observed. Thus, while Merling had reported a carcinoma of the appendix in 1838, and other observers had noted them at infrequent intervals, it was not until 1882 that Beger described the first undoubted case, his diagnosis being the first to be supported by microscopical examination. During and after 1900 reports became more frequent. In 1900 alone there were described nine cases, or as many as the total of all accepted cases previous to that year. During 1901 and 1902 seven cases were added; in 1903, fourteen; in 1904, six; in 1905, twelve; while in 1908, including the nine cases collected by Harte from his own clinic and from those of the Fellows of the American Surgical Association, from whom he had asked for personal observations, there appeared reports of twenty-nine cases. The total thus far reported exceeds one hundred cases. Harte, whose paper appeared in June, 1908, collected a total of one hundred and one cases of carcinoma.

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But his list includes twelve cases in which the diagnosis may be questioned because of lack of sufficient data in their original description. A review of the literature, particularly that of the last few years, while by no means complete, has revealed fourteen cases not found by Harte or appearing after his paper was prepared. Deducting from Harte's total the above mentioned twelve cases, and adding to it these fourteen, together with that here presented, the total of well authenticated cases is brought to one hundred and four.

The explanation for the remarkable increase in the frequency with which the lesion is now being observed lies, without doubt, in the increasing tendency toward a routine laboratory examination of all tissues removed by operation. Many of the cases on record have occurred in appendices which showed no gross evidence as to the real nature of the lesion present. Indeed, in some instances the appendix concerned had been removed merely as part of the surgical routine of performing appendectomy during laparotomies undertaken for the relief of conditions having no connection with the appendix. Such cases were formerly overlooked. Today they surprise the pathologist by their unexpected appearance in his sections. So common has the tumor become that it is estimated to occur in from .3 to 1 per cent. of all appendices removed for appendicitis. Thus Kelly, in seven hundred and six cases operated upon, found two cases of carcinoma; Elting found a ratio of one to one hundred and sixty; Moschowitz, a ratio of one to one hundred and twenty-five; Hacker finds ten cases among a total of 2,033 appendices examined in a single laboratory during a period of ten years, or a ratio of one to two hundred and three. The tumor herewith described, together with a second of similar nature from a woman twenty-seven years of age, occurred in a series of four hundred and forty appendices examined during the past three years. The ratio is, therefore, one to two hundred and twenty. Of these four hundred and forty appen-

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dices, three hundred and twenty-six were removed for appendicitis. The second tumor appeared after the preparation of the present report. It was removed during the course of an ovariotomy.

One reason for the undoubted frequency with which the lesion has been overlooked is to be found in the small size of the tumor mass usually found. Zaaijer, for example, reports one case in which the entire tumor measured only 0.5 x 1.1 x 1.1 mm. It may vary from such microscopical size to the size of a pea or of a cherry stone. Only exceptionally does the diameter exceed 1 cm., though occasional tumors have been described as, "as large as a marble," or "as large as a normal ovary." The gross appearance is usually that of a firm, whitish or yellowish nodule, with vaguely defined linear markings. It may occupy the whole middle portion of the cross sectioned appendix, producing slight or pronounced bulging of the enveloping walls; or it may appear as a nodule extending only a slight distance circumferentially and bulging the mucosa in a limited area without occluding the lumen. Again, there may be no distinct tumor mass, but only a thickening of the wall. Most often, perhaps, the appearance is simply that which might be presented by the common obliterating fibrosis, excepting that there is not the diminution of caliber usually observed in the latter condition, but rather a more or less pronounced tendency toward enlargement. The obliteration of the lumen, when present, varies in its location and extent. Most often it occurs at or near the tip; in a smaller number of cases near the base; while least frequently of all it appears in the middle portion. The distal third is its favorite location. Thus, among seventy-eight cases in which the location is given, it involved the distal third of the appendix in forty-eight, or 61.5 per cent. In five cases the entire lumen has been obliterated by tumor growth. In Eccles' case there were two distinct tumor masses.

The appendix as a whole may present no noteworthy

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appearance, although there commonly occur lesions dependent upon inflammatory conditions, either acute or chronic, and more particularly the latter. It may be of increased firmness. It has frequently been bound by old adhesions, especially in its distal portion, and it may be distorted or bulged, especially in the area of tumor formation. In those acute cases in which pus formation has taken place, the pus may be collected in a sac distal to the obliterating tumor, and the necrosis and perforation sometimes observed are usually found close to the point of obliteration. In some cases the entire appendix has suffered distortion, this being particularly true of the organ affected by the so-called "colloid" carcinoma. In such cases the appendix becomes a sac filled with the peculiar pseudomucinous secretion of its erring epithelial cells. It is in this class of cases that the greatest enlargement of the appendix is found. The first recorded case, that of Merling, was probably of this type, as were also the early cases recorded by Rokitansky, though neither observer examined his specimens histologically. Roberg has described a peculiar dilated appendix, measuring 11 x 6 cm., in which there was an area of colloid appearance involving the whole thickness of the wall, while there had been escape of a quantity of the colloid material into the general peritoneal cavity. Evidence of the disease was in this case discovered during the course of an operation for the relief of a left inguinal hernia, and no history of symptoms referable to the appendix could afterward be elicited, even upon careful questioning.

CLASSIFICATION.

Rolleston and Jones first divided the carcinomata of the appendix into two classes: First, the polyhedral or spheroidal cell type, and second, the columnar cell type. Cases apparently intermediate in form have been described, while there are occasional examples of the colloid form above referred to. The latter appear to be fundamentally

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of columnar cell type. Besides the carcinomata, there have been a few cases of apparently genuine sarcoma, while in other cases tumors have occurred which were considered by competent pathologists as endotheliomata.

HISTOLOGY.

The spheroidal cell type of carcinoma, which has been called also "carcinoma simplex," and "carcinoma solidum diffusum," bears a striking resemblance to the basal cell carcinoma of the epidermis known clinically as "rodent ulcer." It is made up of small round or polyhedral cells, with little cytoplasm and sharply staining nuclei. The cells are arranged as closely crowded nests or bars, supported by delicate connective tissue trabeculæ, the outer layer of cells approaching the columnar type. There is no appearance of lumen formation, though there may occur frequent spaces within the cell collections, such spaces empty or filled with cell debris or with a hyaline material. While there may be wide extension of these cell cords throughout the walls of the appendix and even into the mesentery, the cells fail to show in sections any evidence of active division. In the second great type the cells are of columnar form, and in their migration they continue to reproduce the glandular arrangement usually observed in intestinal carcinomata. If such cells retain their secretory activity they may produce the "colloid" carcinoma, in which type there is at times the production of great quantities of pseudomucinous material. It is probable that some of the tumors, which have been classed as sarcoma or again as endothelioma, have in reality been examples of the spheroidal cell type of carcinoma. And it must be said that there is some question as to the proper classification of tumors of this type. Their origin from the epithelium has not yet been demonstrated satisfactorily, while they do present certain characteristics very strongly suggestive of the endotheliomata, particularly of the type commonly found in the parotid region. But the occurrence of forms

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apparently intermediate in structure between this and the typical adenomatous forms of carcinoma, as well as the malignancy at times developed, leads us to consider them, at least for the present, as of epithelial nature. Henke states that when hardened in alcohol the cell masses of endothelioma do not shrink away from their enclosing walls, while in carcinoma such shrinkage does occur. Judged by their reaction after such treatment, these tumors are of epithelial nature, since shrinkage of the cell cords is a marked characteristic, as has been observed by many writers.

The spheroidal cell type is by far the most frequent in occurrence. Thus, of ninety-two cases in which the type is given, the spheroidal cell occurs in fifty-two, or 56.52 per cent.; the columnar cell type in seventeen, or 18.47 per cent.; the colloid in seven, or 7.6 per cent. Sixteen tumors are variously classified or insufficiently described, so that their classification is doubtful. It is not unlikely that perhaps half of the latter tumors should be considered as of spheroidal cell type.

AGE INCIDENCE.

The early age incidence of the appendiceal neoplasm is one of its most striking characteristics. The following table, compiled from a list of ninety-six undoubted cases in which detailed accounts have been given, shows the relative frequency for the occurrence of carcinoma in the successive decades of life:

Age.	No. Cases.	Percentage of all cases.
1–10	5	5.2%
11–20	17	17.7%
21–30	37	38.5%
31–40	18	18.7%
41–50	9	9.3%
51–60	4	4.1%
61–70	2	2.08%
71–80	3	3.1%
81–90	1	1.04%

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Of the ninety-six tumors, fifty-nine, or 61.4 per cent., occurred during the first three decades; while seventy-seven, or 80.1 per cent., occurred during the first four decades. Only ten cases, or 10.4 per cent., occurred in subjects over fifty years of age. Such figures contrast sharply with those usually found for the occurrence of intestinal carcinoma. Thus Rolleston, and Rolleston and Shield, in an analysis of one hundred and thirty cases of carcinoma of the cecum and of the remainder of the large intestine, find the average age of the patients to have been 48.5 years.

Further analysis of the cases in our list shows that it is the spheroidal cell type that has determined the remarkable grouping of these tumors in the early decades of life. Of the seventy-seven cases of the first four decades, fifty-one are of spheroidal cell type; nine of columnar cell type; three of colloid type; while fourteen are variously classified. Of these fourteen at least eight, and perhaps more, should probably have been considered as examples of the spheroidal cell form. On the other hand, of the nineteen tumors occurring after forty years of age, only four are spheroidal cell, while there are eight columnar cell and five colloid; two are classed as "scirrhous." In other words, of the fifty-five tumors of the spheroidal cell type, fifty-one, or 92.7 per cent., occurred before the age of forty-one years, while only one occurred in patients over fifty years of age. It is evident that the spheroidal cell carcinoma is a tumor of early life.

SEX.

Consideration of sex shows a slight prepondenrance of females among those affected. Thus, of one hundred and three cases in which the sex is stated, there were sixty-one females and forty-two males.

While the columnar cell and colloid types, though occurring occasionally in comparatively young subjects, appear to follow for the most part the laws governing the forma-

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tion and growth of tumors from other portions of the intestinal tract, the early appearance and atypical behavior of the spheroidal cell carcinoma of the appendix raises several interesting questions. First as to its origin, then as to the causes operating for its inception, finally as to its ultimate fate. Concerning its origin, most writers have held to the belief that it arises from the epithelium of Lieberkühn's crypts, which has been disturbed by a preceding ulcerative lesion and subsequently entombed within the resulting fibrous scar tissue. Such explanation has been advanced by Ribbert and by many other writers. Facts supporting this view are: The very frequent history of repeated attacks of appendicitis preceding the discovery of the lesion; second, the fibrosis and small round-cell infiltration usually observed, as well as the occurrence of old adhesions; third, the more frequent occurence of the lesion in the distal portion of the organ, this being the part particularly liable to acute ulcerative changes. But, on the other hand, there are well authenticated cases in which careful questioning has elicited no evidence of any preceding suppurative or ulcerative condition. Such cases are observed especially among the very young patients, in whom there may occur an acute attack of typical appendicitis, which upon operation reveals the spheroidal cell carcinoma present in an appendix the seat of suppurative and necrotic changes, and not infrequently perforated. Here it appears evident that the carcinoma must long have antedated the inflammation. In view of such findings, it appears to be a fair question whether the more usual history of slight recurrent attacks of appendiceal symptoms may not have depended entirely upon the gradual growth and pressure from a developing tumor for whose origin no acute initial attack can be held responsible, rather than that such attacks have been the cause of tumor formation. The tumor may be the cause rather than the result. Besides the theory of inflammatory origin, several other possibilities

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present themselves. First, the tumor may arise, as has in some cases been maintained, from the endothelial lining of the lymph spaces, and, as has already been said, several points are strongly suggestive of such origin. Such are the morphology of the tumor cells, the tendency toward strict localization despite the rather abundant local proliferation, and, especially, the frequently observed fact that the tumor appears to originate in the submucosa rather than in the mucosa.

Second, there is the possibility of an origin from epithelial nests, due to developmental faults. Such an origin would explain its first appearance in coats other than the mucosa, as well as its frequent occurrence in very young subjects. It would further explain why in our own tumor, as well as in all thus far observed, it is impossible to demonstrate with certainty any connection between the tumor cells and the epithelium of the mucosa. It must be said, in this connection, that only a very few cases have been closely studied with the view of determining the origin of the cells. Zaaijer describes peculiar structures in two of his cases. He observed small cystic spaces appearing like dilated Lieberkühn's crypts, in which the epithelium on one side was of typical columnar form, while on the opposite side was an abrupt transformation into cells of the carcinomatous type. In Hurdon's case a few crypts were believed to show carcinomatous alterations. Careful study of our own tumor has failed to show such appearances. While occasional crypts show flattening of their epithelial cells, together with an atypical staining reaction on the part of such cells, the changes appear to be merely of a degenerative nature. Nor is there any evidence in our own tumor that it had its origin in nests of epithelial cells detached by a former inflammatory lesion and afterward caught and embedded by scar tissue. The sections show a well preserved mucosa in all portions of the appendix distal and proximal to the tumor site. Sections were taken

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at the margin of the tumor area and some of these show the edges of the tumor, where the overlying epithelium has not yet been crowded over against the epithelium of the opposite side of the lumen. Such sections show a mucosa of normal appearance, excepting as it is invaded by masses of tumor cells evidently advancing into it from below. The crypts show, as has been stated above, only such occasional slight dilatation and evidences of cell degeneration as would naturally follow from the pressure being exerted upon them.

Finally, given an origin from the mucosal columnar cell, the anaplasia exhibited by the tumor cells should correspond to a degree of malignancy far greater than is apparent. Anaplasia, or the departure among tumor cells from the normal morphology of their ancestors, has been held by Bland Sutton to be a measure of the malignancy of such cells. He has stated it as a law that the greater the degree of anaplasia, the greater is the malignancy. If this law holds true, and it does appear to hold for most neoplasms, then it would be an argument against the origin of these tumors from the adult columnar cell of the intestinal mucosa.

Only continued observation of all tumors found in the appendix and cecum can solve the problem as to the ultimate course of these neoplasms. It seems entirely possible that we have here, as suggested by Zaaijer, an example of the very earliest stage of intestinal carcinoma. It is possible, though not probable, that such neoplasms may in some cases disappear without causing trouble. Very frequently their possible development is interrupted as a consequence of the occurrence of clinical symptoms of acute or chronic appendicitis leading to appendectomy. But unless so absorbed naturally, or removed surgically, it appears very probable that after maintaining its benign, well localized character during the earlier decades of life, such a tumor may sooner or later gather fresh impetus, may

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invade the cecum, or develop metastases, and appear, usually after the fifth decade, as a malignant tumor of the cecum, its real seat of origin remaining in such cases unsuspected.

Thus far in the literature there have been nine cases of primary carcinoma of the appendix in which there has been malignant development, either in the form of extension to the cecum or in the production of local or general metastasis. (These are the cases of Beger, Whipham, Lejars, Weir, Menetrier (quoted by Elwell), Henking, White, Le Conte and Roberg.) The average age in these cases has been forty years. The type of tumor has been in three cases spheroidal cell. In Cabot's case, recorded by Harte, there was a nodule of spheroidal cells in the walls of the Fallopian tube, but there was no evidence here of any malignant nature.

It will be noted that while in general the spheroidal cell tumors largely predominate, they are present in only one third of these malignant cases. This may mean that the spheroidal cell type is only very rarely malignant, or it may mean that when taking on a malignant character the tumor cells assume characteristics different from those of its early benign stage.

In connection with this question of malignancy, it is interesting to note the observations quoted by Rolleston and Jones from Bunting, in which benign tumors of exactly similar histology were found in the jejunum and ileum, the only difference being that in Bunting's cases the average age of the patient was 46.8 years.

CLINICAL CONSIDERATIONS.

There is little possibility of the diagnosis of appendiceal carcinoma previous to operation. So far as known, there is no case where such diagnosis has been made. The picture is usually that of a chronic recurring appendicitis, and between the definite attacks there may be entire sub-

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sidence of all symptoms. In occasional cases, particularly in the young, there may be an acute attack of gangrenous appendicitis, with all the signs and symptoms typical of that condition, but with nothing to indicate the presence of the carcinoma. Again, cases are on record in which no history of any symptoms referable to the appendix could be determined. Such cases, however, are infrequent, and it is in the chronically inflamed appendix that we may expect to find carcinoma most often. Thus, among fifty-seven cases in which the previous history is given, the duration of symptoms was from eight hours to two days in five cases; from three days to two weeks in eight cases; from two weeks to one month in six cases; from two to three months in six cases; from four to six months in four cases; from seven months to one year in six cases; from thirteen months to two years in eight cases; from three to four years in three cases; from five to ten years in eight cases; over ten years in three cases. The longest time noted was thirteen years. Thus in forty-nine per cent. of the cases there was a history of symptoms enduring for periods of more than six months before operation. Associated with a history of previous attacks there may be acute exacerbations of marked severity. Thus, in Lothrop's case, the patient, who was a nine-year-old girl, had suffered slight general abdominal pain one month previous to the time of operation. Two days previous to operation there was a typical attack of acute appendicitis. Laparotomy revealed a perforation, with abscess formation.

Aside from the history of repeated attacks, the condition offers nothing distinctive. Pain, tenderness, rigidity, temperature, pulse, and blood findings will depend upon the associated inflammatory changes, and these are only such as might occur without the added presence of carcinoma. The small size of the tumor mass usually precludes any possibility of its being palpated, although in the case reported by Le Conte there was a palpable mass, due to an intussus-

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ception of the appendix into the cecum. The nature of the lesion was not suspected before operation. The slightly greater predisposition of the female sex is a fact of little practical assistance in diagnosis, though it gives perhaps additional value to the removal of the appendix during the course of laparotomies for the relief of pelvic conditions. While the question of heredity might well be taken into consideration, the only observation bearing upon it is that of Harte, in one of whose cases the patient's mother was a sufferer from scirrhous carcinoma of the breast.

Among the lesions of acute type associated with carcinoma of the appendix have been suppurative and gangrenous appendicitis, and perforation, with local abscess or peritonitis. In Isaac's case there was perivesical abscess, multiple abscesses of liver and lung, verrucous endocarditis, double empyema and abscess of brain. This case shows the indirect danger from the tumor in its becoming a possible factor in the production of suppurative conditions and pyemia. Among the associated chronic conditions are found any or all of those commonly to be expected in chronic appendicitis from whatever cause. Such are the production of fibrosis in the wall of the appendix itself, and the formation of localized or generalized adhesions, with the consequent possibilities for twists and kinks in appendix or bowel.

The prognosis is favorable, but not so unguardedly so as has at times been maintained. A considerable number of cases are on record in which the history subsequent to operation has been ascertained. Such cases usually show entire freedom from recurrence or metastasis, the periods of observation varying from several months to years. One of Letulle's cases, ten years old at the time of operation, was entirely well nine years afterward. The same period of freedom from return is given by McCosh for one of his patients. In about twenty other instances from various sources there has been no return during periods of from one

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to five or six years. In our own case the patient is entirely well six months after operation.

The fact must still be borne in mind, however, that isolated cases have shown malignant development either before or after operation. One of the most striking cases of recurrence is that of Mènètrier. Here there was no anatomical evidence at the time of operation of any extension outside the appendix, yet the patient, who was but twenty-seven years of age, returned to the hospital three months afterward, and was found to have suffered an extension of the carcinoma into the cecum, ascending colon, peritoneum, and left subclavian lymph nodes. Histological study of the appendix showed carcinomatous infiltration of its coats throughout the entire length of the portion removed, and it is plain that the later extension had its origin in the stump left at the time of operation. The tumor in this case was of spheroidal cell type. Two other instances of malignant development in young subjects comparable to this case are those of Henking and Le Conte. In Henking's patient, a man twenty-three years of age, there was an extension of the tumor into the cecum and ileum, resection of this portion of the bowel becoming necessary. In Le Conte's case the patient was a woman twenty-one years old. Here there was the development of metastasis in two of the ileocecal lymph nodes. Both these cases were also of spheroidal cell type.

While such cases appear to be very exceptional, their occurrence must be considered in determining the question of prognosis. The prognosis must be further modified by a consideration of the type of tumor found. Thus, as has already been indicated, the columnar cell and colloid types tend to appear in middle or late life and to present the histological characteristics of carcinomata from other portions of the intestinal tract, while, in accordance with such characteristics, they are distinctly more prone to malignant development. There is little question that in such tumors the prognosis is unfavorable.

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The prognosis is in all cases considerably modified by reason of the peculiar susceptibility of the appendix to inflammatory conditions. Whether such conditions lead to the formation of the tumor in the first place, or whether they are the result of tumor growth, or, finally, entirely adventitious and of an accidental nature, they frequently give rise to clinical symptoms leading to the removal of the appendix. Such early removal of the diseased organ acts as a self-imposed check upon the possible progress of the neoplasm, and has, without doubt, saved many an appendix from an old-age malignancy.

CONCLUSIONS.

1. Primary carcinoma of the appendix is of relatively frequent occurrence. The tumor is usually of small size, strictly localized, and occurs most often in the distal third of the appendix. Its discovery has usually been accidental.

2. It is peculiarly liable to occur in young subjects, eighty per cent. of the cases occurring during the first four decades of life. The female sex shows a slightly greater liability than the male.

3. The etiology is obscure. There is usually a history of recurrent inflammatory conditions of the appendix preceding the discovery of the lesion, but the inflammation may be of primary acute type. An origin from embryonic cell nests appears possible.

4. The diagnosis of the condition previous to operation has never been made.

5. The association with the neoplasm of acute or chronic inflammatory conditions leading to appendectomy acts as a check upon its development, so that the prognosis is in most cases favorable. But if early appendectomy is not performed, it appears probable that the prognosis differs in no wise from that in other forms of intestinal carcinoma.

6. Pathologically these tumors are of considerable interest. It is possible that their careful study may throw light

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upon questions of the etiology and development of carcinoma not only of the appendix, but also of those found in other portions of the intestinal tract.

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The Operative Treatment of Acute Hemorrhage from the Stomach.*

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Not very many years ago I used to see patients die in the medical wards of the city hospital from hemorrhage from ulcer of the stomach, and occasionally an autopsy, usually showing that the hemorrhage was from a chronic ulcer. I remember well one case of a small definite ulcer in the anterior wall of the pylorus, with an open vessel in it. This patient had died after repeated copious hemorrhages from the stomach, and no surgeon had ever been asked to see him. One could not help thinking that one would have liked the chance to do something for that man. Not all the cases that died were middle aged men with chronic ulcer. I remember well one young woman with acute ulcer, who bled to death in the surgical wards unoperated upon. At this very time in the field of pelvic surgery we were getting our first brilliant results in extrauterine pregnancy, the hemorrhage from ruptured tubes, and were finding that with patients even in a considerable degree of shock or collapse, the time spent in opening the abdomen, tying off and removing the tube was not wasted, as after it was done it enabled the patient to rally from the shock without recurrence of the bleeding, so that we were constant witnesses of and actors in the saving of life by these operations. One could not help feeling that the benefits of surgery should be extended at once to the sufferers from

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ulcer of the stomach, and in suitable cases we have not hesitated to do so. It has been recognized that the field was a more difficult and complicated one in which to act. It was known that many cases of hemorrhage, even profuse hemorrhage, from stomach ulcer recover without operation, but bitter experience taught us that some of them did not. To act wisely we must not add operative shock to the burden of those who were going to recover unaided, while on the other hand we must not let a patient die for lack of assistance, which we might give him by operation.

In this field the questions have proved vastly more complicated than in that of pelvic surgery. While the operation of removal of a ruptured tube may be as easy as plucking a rose, except that you have to tie the stem, the proper sewing of a bleeding vessel in an ulcer may not be possible at all, and as we all know, it may be impossible to find an ulcer, and the bleeding may be rather a rapid oozing from a superficially eroded surface, hard to find, and, if extensive in area, still harder to deal with. It is to consideration of a few of the principles which should guide us in this difficult field that I wish to invite your attention.

It is the general opinion today among operators of the widest experience that in the majority of cases of acute hemorrhage from the stomach operation is not indicated:

1. because so large a proportion of cases which have had one or more hemorrhages from a stomach ulcer recover without operation;

2. because operation, which must often be rather extensive and complicated, is ill borne by patients in the collapse following a copious hemorrhage and may be sufficient to turn the scale against the patient;

3. because, as stated above, we may not always determine beforehand whether the bleeding is from an ulcer or a hemorrhagic erosion, or even if an ulcer is present whether that ulcer is easy to deal with or may require a complicated procedure, or whether there may be multiple ulcers.

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We cannot, therefore, determine beforehand the extent and complication of the work required to deal directly with the ulcer, while the simpler procedures of gastroenterostomy and jejunostomy seem hardly adequate in the presence of so grave a condition as copious bleeding. Notwithstanding all this, we must, when possible, not let patients die from a hemorrhage controllable by surgical means, and the question is, when and in what cases is it justifiable for us to attempt their employment? It is to a brief consideration of the conditions which should determine our action in these cases that I invite you today.

In the first place, as we have all been taught, acute hemorrhage from the stomach is most frequent in young women, and has generally been believed to be evidence of ulcer, but Hale White and others have shown that sometimes not only no ulcer, but not even a so-called "mucous erosion" may be found at operation or autopsy. These cases almost all recover without surgery, and especially in the cases where there is no ulcer the medical treatment required is brief. If ulcer is present it is almost always acute and heals promptly under medical treatment. Mucous erosions are believed to be infective in origin, and much has been written on the blood chemistry of these conditions, which is too complicated for me to discuss. They are also usually acute and recover under rest and careful diet. They also, as do the acute medical ulcers and the cases of so-called spontaneous hemorrhage or gastrostaxis, occur in overwhelming proportion in young women. It will be readily seen that in these cases the source of the hemorrhage would be difficult to find or to control, and since we know that, even when alarming, ninety-five per cent. of them recover, we may well hesitate to add the shock of a probably inefficient operation to the burden which the patient already has to bear, and unless under exceptional conditions we would best leave them to the guidance of the physician. One of my earliest experiences

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-in gastric surgery was that of watching one of my colleagues operate for gastric hemorrhage. He could not find the ulcer, but finally, guided by a sentinel gland, he found and excised an acute ulcer on the greater curvature. The patient was too weak to rally from the rather long and complicated procedure.

In chronic ulcer of the stomach, however, the problem is different. We are dealing here with a condition in which quick healing cannot, as in acute ulcer, be counted upon to prevent hemorrhage. We can only keep the stomach at rest during the long period required. We have a thick, indurated area, with an eroded vessel in the middle, which may be small or large, even up to the size of the gastro-duodenalis or splenic artery. Brinton states that in fifty-five per cent. of the fatal cases of hemorrhage the splenic artery is involved. The fatal cases of hemorrhage form only four to ten per cent. of all the cases of gastric hemorrhage due to ulcer. According to Savariaud, quoted by Mayo, eighteen and a half per cent. of those dying of hemorrhage die so quickly that an operation could not be performed. About half the cases of fulminating hemorrhage die within thirty-six hours, without coming out of the collapse ensuing upon the bleeding, and the remaining half live from two to fifteen days. In reviewing a case which has died under operation in collapse, we cannot help wondering whether it was not the operation which increased the patient's burden beyond the bearing point, and whether without it he might not have rallied sufficiently to undergo an operation for the ulcer after the subsidence of the shock. It will therefore be wiser in the majority of cases of chronic ulcer not to operate in the acute stage, but give the patient an opportunity to rally from the shock. Operate we must, however, and in chronic ulcer the severer and more profuse the bleeding the shorter the time it is advisable to wait. The depletion of the blood by hemorrhage is favorable to a second hemorrhage, and the pros-

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tration and anemia resulting from it are the worst conditions for repair, which is the only thing in the absence of operative interference which will stop the bleeding. If the bleeding from a chronic ulcer, instead of acute, be slight and oft repeated, a dribbling so to speak, we may wait longer, but must operate if we want the ulcer to heal and the hemorrhage to stop. Chronic ulcer of the stomach is a surgical disease, and in the presence of hemorrhage, especially if severe, it is a more urgently surgical disease than it was before, because the sword of hemorrhage hangs by a thread over the patient's head until the ulcer is excised or healed. A chronic ulcer, also, unlike an acute ulcer or erosion, can usually be found, and we are not going to have to waste the time of an exhausted patient in exploring the interior of the stomach. The one thing, then, which shall determine in the minds of the judicious whether a gastric hemorrhage is surgical or not is whether there is a history of ulcer. If we expect to find a definite chronic ulcer we cannot help advising operation in gastric hemorrhage. If we do not the question becomes more difficult, and there may be doubt as to what to do. In a recent case (Case VI of this paper) a male of thirty-one years was referred to me for operation after two severe hemorrhages from the stomach at an interval of six months, without any history of gastric disturbance whatever between the two attacks. I refused to operate. I did not believe that I could find anything to operate upon. The patient was in excellent health at the time I saw him, and is still, though the future alone will decide as to the wisdom of my course.

Of the five cases upon which I have operated for hemorrhage, all but one have had a history pointing to ulcer. The case without an ulcer history was a young man, a tinsmith, of twenty-four years, who had had within twenty-four hours two very severe hemorrhages from the stomach.

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He was of healthy appearance, except for the pallor of hemorrhage. Operation showed the stomach empty, with no scars or evidence of ulceration. Posterior gastroenterostomy was done and the patient recovered, though he vomited dark blood on the day following the operation.

Of my other four cases, two were gastroenterostomies and two excisions, of which one, the first case of excision, died. The two cases of gastroenterostomy have remained well for two and three years respectively, and the second excision is too recent to determine.

The question of what operation to perform in these cases is a difficult one and has given rise to much discussion. Certain men advocate the performance of gastroenterostomy so as to put the stomach at rest; others urge that excision should be performed in all cases. The fairer position would seem to be that taken by Mayo, that in cases of moderate hemorrhage, which at no time is dangerous to life from its profusion, gastroenterostomy is the preferable operation. It is simpler and quicker than excision—a consideration which is important in these cases, weakened as they are from loss of blood—and in the moderate cases, by putting the stomach at rest, it enables the necessary healing to take place. Especially in the cases where the ulcer is situated at the pylorus and where there is obstruction to the passage of food, it is favorable to quick healing and therefore rapid and permanent cessation of hemorrhage. In the two cases in which I performed it, however, it was followed in twenty-four and thirty-six hours respectively by the vomiting of blood, so that although both cases recovered we cannot say that it immediately put an end to the hemorrhage. Undoubtedly in these cases the hemorrhage was not from very large arteries. At any rate, the rest secured from the operation was sufficient to allow the patients to recover.

In cases of profuse hemorrhage, indicating the erosion of large arteries, we are not assured that gastroenterostomy

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will prevent another hemorrhage, which might prove fatal, and if the ulcer is extensive, indurated and stiff-walled, a gastroenterostomy looks rather hopeless. Such was Case I—my fatal excision. In these cases, where possible, excision should be practised, but if from the location and extent of the ulcer excision is too difficult we may rely upon gastroenterostomy alone.

For these cases in which gastroenterostomy will probably prove inefficient and excision is too difficult, the operation of simple ligation of the vessels leading to the ulcer has been recently advocated. This can be done in the case of the gastroepiploica dextra and sinistra quite easily, and Braun has shown that even ligation of the four main arteries leading to the stomach, the gastroepiploica dextra and sinistra, the gastric and pyloric arteries, may be performed without causing gangrene of the organ. It is certainly possible to ligate either of the gastric arteries lying above and below an extensive ulcer situated either on the lesser or greater curvature without danger of gangrene of the stomach, and such an operation may prove to be sufficient to stop the hemorrhage without the more extensive and complicated procedure of excision of the ulcer.

Ligation of the splenic artery might cause necrosis of the spleen and would therefore be inadvisable. Braun has also shown that on account of the anastomosis of the splenic with the gastroduodenal artery, ligation of either of these arteries would not be sufficient to stop hemorrhage from erosion of large arteries lying in the pancreas. Be that as it may, the operation of ligation of the arteries offers us some hope in cases where gastroenterostomy might not be sufficient or excision too difficult. Gastroenterostomy with ligation of the arteries leading to the ulcer may be a distinct addition to our resources. If the patient is in good condition and gastroenterostomy is done, it should be combined, as Mayo says, with excision of the ulcer if possible, especially if the ulcer lies some distance above the pylorus.

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Extensive resections, however, in patients exhausted by hemorrhage are more dangerous than under normal conditions, and in a certain proportion of the cases it would probably be wiser not to attempt them.

In severe hemorrhage from the stomach, where no ulcer can be located, the Mayos have practised opening the anterior wall of the stomach and exploring its interior, pressing into the opening the posterior surface by the finger passed behind it, thus attempting to locate any bleeding points or areas. They have been successful in certain cases in ligating points thus found or in inverting and surturing bleeding points. As a general thing, these cases, where there is no demonstrable lesion, are operated upon soon after severe bleeding, and the exploration of the interior of the stomach prolongs and complicates the operation. I personally feel that in these cases where no demonstrable lesion is present it is wiser either to do nothing, or, as I have done in my own cases, perform a quick posterior gastroenterostomy. The length of time required for an exploration is out of proportion to the probable advantage to be gained from it. Multiple points are more probable than a single bleeding point in these cases. The simplest and quickest way to put the stomach at rest is what is needed. The histories of my own cases are here appended.

Case I.—A. R. F., male, thirty-nine years old. Born in Sweden. Occupation, electrician. Admitted to the Boston City Hospital on November 24, 1903. Family history negative. A history of stomach trouble for the past two years.

Present Illness.—For five weeks pain in epigastrium after eating. Acid eructations, with occasional vomiting. Loss in weight and strength in past few weeks. Two days past, stools black, tarry and offensive. Five hours ago patient showed signs of severe intra-abdominal hemorrhage and was transferred to hospital by his physician.

Physical Examination.—Well developed and fairly nourished. Facies anxious. Sallow skin and mucous mem-

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branes. Pupils small and do not react (morphia). Tongue dry, slight coat, protruded in straight line. Pulse regular, fair volume and tension. Heart negative, sounds weak. Lungs negative. Abdomen, some tenderness in epigastrium.

Operation.—High left rectus incision. Abdomen opened and stomach presented an indurated, light-colored mass the size of a quarter of a dollar, two inches from the pylorus. Stomach incised and the mass found to be an ulcer, with crater-like depression the size of a nickel, with one bleeding point. Ulcer excised. Stomach closed with catgut. Second row linen thread sutures to invert first sutures. Abdomen washed out. Closed with through-and-through silkworm gut sutures. Small gauze wick left in wound.

November 26.—Patient comfortable for thirty-six hours after operation. Pulse fairly good. Temperature normal. About this time the patient had another sudden onset of pain, followed by rapidly rising pulse and restlessness and thirst. Intravenous salt and strychnia gave temporary relief. Pulse increasing four hours after attack of pain. Hot gelatine solution containing adrenalin by mouth. Patient failed rapidly and died.

CASE II.—E. C. S., female, twenty-six years old, single. Admitted to the Boston City Hospital on March 5, 1904. Family history negative. Previous history. Four years ago pain in epigastrium an hour after eating, lasting from one to two hours. When stomach emptied a feeling of uneasiness relieved by food. No vomiting, no blood, no dark stools. Pain not severe enough to confine to bed. Two weeks of illness, then well up to two months ago, when admitted to the hospital with a history of two weeks before, a similar attack to previous one. No blood or dark stools. In hospital one week, with no gastric signs. Discharged to convalescent home in good condition.

Present Illness.—Five days ago suddenly felt faint, vom-

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ited, no blood and no other signs. At work up to two days ago. Then had another attack of faintness, went home and vomited dark blood and noticed stools were dark. Admitted to hospital. Rectal feeding. Ice only by mouth. No gastric distress except hunger till 3.30 today. Faint, and vomited few ounces of clotted blood. Again blood at 4 and 4.45 o'clock.

Physical Examination.—Well developed and fairly nourished. Pale. Pupils react. Pulse regular. Poor volume and tension. Heart and lungs negative.

Operation.—Incision three inches long in the median line above umbilicus. Stomach showed no ulcer on anterior wall, greater or lesser curvature. Pylorus patent to finger. Small nodule felt on lesser curvature the size of a large bean, apparently glandular. No induration about it. Posterior gastroenterostomy.

This patient vomited a little blood on two occasions during the first week after the operation. She left the hospital in three weeks, and is now, five years later, in excellent health.

Caes III.—W. G. M., male, fifty-four years old. Born in Nova Scotia. Occupation, mason. Admitted to Boston City Hospital on November 19, 1904. Family history negative. Previous history. Thirty-five years ago fell from building and fractured his spine. In bed six months. Twenty-seven years ago fell and got compound fracture of the skull. Always has had indigestion.

Present Illness.—Four weeks ago severe pain in stomach one and one half hours after eating. Worse, and one week ago vomited fresh blood. Vomited dark red material two days ago and later passed blood in stools.

Physical Examination.—Poorly developed and nourished. Marked pallor of lips, conjunctivæ and skin. Emaciated. Pupils equal and react. Pulses equal, regular, of fair volume and tension. Arteriosclerosis. Heart and lungs negative. Patient vomited quantity of blood in admitting room. Abdomen negative.

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Operation.—Incision three inches long in epigastrium to right of median line. Abdomen opened. Considerable adhesions between transverse colon and small intestine. These were incised. Posterior gastroenterostomy, with enteroenterostomy. Between enteroenterostomy and gastroenterostomy in ascending loop, bowel folded in and a plication made with Pagenstecher sutures. Five years later (1909) had remained in good health.

CASE IV.—Mr. J., twenty-four years old. Seen in consultation with Drs. Reynolds and Reardon at West Quincy, Mass., on March 29, 1907. Had had within twenty-four hours two very severe hemorrhages from the stomach and I saw about three pints of bloody fluid which he had vomited. He had also had a large bloody stool. He was a healthy looking young man, with no history of pain or indigestion. Pulse ninety and of good quality. He looked pale and anxious. Temperature normal. It was thought that another hemorrhage would be apt to be fatal if as extensive as the previous ones, and the abdomen was opened. The stomach was found empty, with no scars or evidence of ulcer upon it. The small and large intestines were evidently filled with blood. It was thought that the bleeding probably came from an ulcer of the duodenum and a gastroenterostomy was performed. He bore the operation well and made a good recovery, which was complicated only by another hemorrhage on the day following the operation. When last heard from in May, 1908, he was up and about and in excellent condition.

CASE V.—Mr. C., a foreman in the city paving department, forty years old. Seen in consultation with Dr. Whitcombe on February 9, 1909. Seven months before the patient had a hemorrhage from the stomach, which was severe and caused him to faint. He had suffered more or less since then from indigestion, having gas and pain about two hours after eating. About twenty-six hours before I saw him he had vomited a large amount of blood and since then had

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had several movements which contained a large amount of black blood. He was very pale. Pulse ninety and of fair quality. While at Boothby Hospital on February 9 he had two stools which contained a large amount of dark blood. Previous to the first hemorrhage, seven months ago, he had suffered from indigestion. It was thought that he must have an ulcer of the stomach and operation was advised, in the hope of tying the bleeding point and making it safe to feed him. This was not possible in his present condition, as the marked peristalsis from food would undoubtedly aggravate the bleeding. A median epigastric incision was made and a small, hard tumor, about the size of a bean, found just at the right of the pylorus, the continuation of a small scar extending toward the pylorus. The size of the pyloric orifice was normal. This small lump in the stomach wall was excised and near it in the mucous membrane there was a red point, which was thought to be the bleeding point. This was excised with the tumor. The surrounding mucous membrance appeared normal as far as could be seen. The opening was closed by catgut sutures of the mucous membrane and three mattress sutures of peritoneum. He bore the operation well and went home in good condition three weeks later.

Case VI.—A. R., male, thirty-one years old, married. Window dresser. Admitted to the Boston City Hospital January 11, 1907.

Family History.—Father died at thirty-nine of pneumonia. Mother, brother and sisters living and well.

Previous History.—Measles as a child. Well and active. Malt liquors and smokes moderately. Denies venereal. In doing some lifting two and a half years ago strained his left side and has since occasionally noticed discomfort to left and below umbilicus, and designates with one finger a tender point two inches below and to the left of the umbilicus. Has noticed "swelling" on the left side of the abdomen. On April 18, 1907, patient was in excellent health.

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In the evening he felt slight nausea, belched gas and then vomited, vomiting projectile in character, some blood, no pain. About an hour later vomited a large amount of bright red blood, estimated at a pint; felt faint, but walked some distance home. The following day the stools were dark and tarry, decreasingly so for five days following convalescence of several weeks without symptoms. Afterward at times, when unusually tired, epigastric discomfort late in evening, otherwise entirely well. July 8, 1908, entirely well; dinner at 5.30 p. m. At 7 p. m. nauseated and soon vomited some bright blood, not frothy, no food. No pain. Several hours later vomited again with considerable amount of blood; fainted. The following day the stools were dark and tarry. During the night vomited a large amount of blood again, fainting. Stools dark for a week. Convalescence without symptoms six weeks. Since well, no gastric pain or distress. Appetite good. Bowels regular. Sleeps well.

Physical Examination.—Well developed and nourished. Pupils equal and react. Tongue, slight white coat. Lungs, resonance and sounds normal. Heart, no enlargement, sounds clear. Slight irregularity in rhythm about once in twenty beats. Abdomen, liver and spleen negative, generally tympanitic. Slightly below and at left of umbilicus on deep palpation questionable mobile mass felt, and over this region slight tenderness on palpation. Rings normal. Small left variococele. Knee jerks present. Test meal, free HCl .09 per cent. Total acidity, .186 per cent.

January 15.—Fasting contents negative as to stasis. Started today on meat free diet for stool examination. No symptoms of any kind apparent. Up and about ward daily. Today, June 10, 1909, is in excellent health, and has had no gastric symptoms.

January 19.—Stool blood free under meat free diet. No symptoms.

January 21.—Operation deemed inadvisable. Discharged.

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Legal Liability of Physicians to Patients.

MARSHALL D. COBLEIGH, ESQ., LEBANON, N. H.

Members of the New Hampshire Medical Society:

The general demand for a higher degree of preparatory work and training on the part of those who are to have the right to practise medicine than formerly obtained may partially account for the recent verdicts that have been returned against physicians in this state for alleged errors. The warning of Judge Bell, sounded in 1853, in *Leighton* vs. *Sargent*, 27 N. H. 468, aptly described a situation that confronts the professional man of today. In that opinion he said: "There are times when the verdicts of juries . . . seem to hold every man who offers his services in any of the professions to an over-rigid accountability and to make him little less than a warrantor or insurer of the success of every business in which he engages. At the present time, it is to be feared, there is a tendency to impose some perilous obligations, beyond the requirements of the law, upon some classes of professional men."

The large increase, within a few years, in the number of actions brought for negligence of the employer for injuries to servants, or of common carriers for injuries to passengers or people about their premises are now augmented by the suits instituted in cases where the treatment of a physician has not been successful, with the result that unless the present tendency is checked, no physician or surgeon can safely practise his art without the financial

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protection of a liberal liability insurance, or unless he received a compensation from the patient commensurate with the risk assumed.

I will cite a few general rules of law bearing on our subject before taking up the discussion of the liability that arises by reason of negligence on the part of the doctor.

"It is immaterial whether the services are gratuitous or for pay, the test being whether or not the physician has undertaken the treatment of the case."

"It is the duty of the physician not only to prescribe medicine but also to advise the patient and attendants."

The physician is the sole judge, in the absence of instructions from the patient, of the number and frequency of visits.

The physician is not a warrantor of results.

The physician, when he has once commenced the treatment of a patient, must not abandon him unless he is discharged without at first giving the patient reasonable opportunity to secure another physician.

Physicians must follow settled rules rather than the latest theories. Treatment other than by settled rules is performed at the risk of the physician.

The foregoing rules may be varied by express contract, but we will not go into that branch of the law for lack of time.

The law requires that you use "due care" in the treatment of your patient. Just what acts will come within the definition of "due care" is often difficult of determination.

A fairly accurate statement of the rule is laid down by a text writer in the following language: "Due care is a degree of care corresponding to the danger involved, . . . the term is relative, and its application depends upon the situation of the party, and the degree of care and vigilance which the circumstances reasonably impose. Where the danger is great, a high degree of care is necessary and a failure to observe it is want of ordinary care." In law

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"due care," "reasonable care," and "ordinary care" are convertible terms.

You need not fear being called into court except for alleged negligence, or willfully doing that which you know or ought to know will result in damage to your patient, or by performing an operation upon him other than that for which you were employed. Neither of the foregoing contingencies is likely to happen, yet you never know when an emergency will arise that requires instantaneous action on your part to meet the demands of the situation. If your treatment is successful, usually all is well. If not, the query whether the failure was due to an error of judgment, negligence, or because you acted beyond your authority, becomes material, and if the patient or his friends scent an opportunity to recover damages, you may be called upon to defend a suit wherein someone demands of you a large sum, or attempts to secure by judgment of court not only all your earthly possessions, but perhaps all that you may expect to lay by for years to come. The rules of law by which the question will be determined are few and simple, and if you will observe and keep within them, you will have few, if any, suits to defend, and these will be successfully resisted.

Negligence has been defined by an eminent law writer as "consisting in the failure to observe that degree of care which the law requires for the protection of the interests likely to be affected by the want of it." It may consist of acts of omission as well as those of commission. In other words, there are two classes of negligence, "active" and "passive." Another statement of the rule may make the term more clear: "Negligence is the failure to do what an ordinarily prudent person would have done under the circumstances, or the doing of that which an ordinarily prudent person would not have done, in either case, causing unintentional mischief to a third person."

Again, the degree of care varies with the skill required

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in the performance of the particular piece of work. A man sharpening a post so that it may be easily driven into the ground far enough to hold it in an upright position will not be required as a matter of law to exercise that degree of skill and care that would be necessary in fitting a mortice or tenon in a high-grade piece of furniture, consequently an entirely different degree of skill would be required in performing a delicate operation upon the eye than would be necessary in extracting a sliver that was simply pushed under the skin on a finger.

The rule of law defining what is due care on the part of a physician has been tersely stated by Judge Bell in the Leighton and Sargent case, as follows: "When a person holds himself out as a physician and surgeon, he impliedly contracts to undertake to bring to the performance of his professional work that reasonable degree of learning, skill and experience which is ordinarily possessed by the professors of the same art or school of medicine, and which is ordinarily regarded by the community, and by those conversant with that employment, as necessary and sufficient to qualify him to engage in such business."

Secondly, the professional man contracts that he will use reasonable and ordinary care and diligence in the exercise of his skill and the application of his knowledge to accomplish the purpose for which he is employed. Again Judge Bell adds: "The uncertainty of the law is almost proverbial. Probably that of the medical profession is not less. Many sects among them entertain almost irreconcilable theories as to the nature and mode of treatment of disease. Among all these it seems to be conceded that the characters and symptoms of disease vary in persons of different ages, sexes and habits of life, and of different or acquired constitutions; and that the treatment of diseases and that of wounds and fractures must be more or less varied with the changes of climates and seasons and with the peculiarities of persons and places. And that cases of sick-

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ness and accident, apparently similar, may yet be rendered substantially different by seemingly slight circumstances, easily overlooked, and sometimes difficult of detection. If this is so, the doubts and uncertainties that surround the medical practitioner, and the errors and mistakes to which he is unavoidably exposed, may well furnish a satisfactory explanation of unavoidable results, where a jury are satisfied of the reasonable skill, diligence, attention, care and treatment.

"To charge a physician or surgeon with damages, on the ground of the unskillful treatment of his patient's case, it is never enough to show that he has not treated his patient in that mode, nor used those measures, which in the opinion of others, even medical men, the case required; because such evidence tends to prove errors of judgment for which the defendant is not responsible, as much as the want of reasonable care and skill, for which he may be responsible." The same judge further remarks: "Upon this point it might be made a question whether a medical man is not bound to apply extraordinary care because his charge relates to the lives and health of his patients, which are to them of unequaled importance and interest. But there is no pretense that a physician is bound by any other rule in this respect than that which governs all classes of men employed in works or services requiring skill, the rule of ordinary care and diligence. There is, of course, a difference in different cases as to what constitutes ordinary care, dependent upon the importance or delicacy or difficulty of the thing to be done. Different things may require different care, but the common rule still applies, which requires such care and diligence as men in general, of common prudence and ordinary attention, usually apply in similar cases, and not that extarordinary care which might be applied in such a case by very careful and prudent persons."

Whether it would be due care for a certain physician to undertake the treatment of a disease or the performance of

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a surgical operation will vary very much according to the complexity or difficulty of the same, or the dangerous or fatal results that will naturally be expected to occur by reason of any error of judgment connected therewith. Whether or not it would be ordinary care and prudence for a physician to attempt to treat certain diseases or perform certain surgical operations will depend largely upon his experience, knowledge of the particular disease or injury, the necessities for immediate action, the difficulty of securing more skillful operators, also by what is considered as sufficient experience and knowledge by others of the same school of medicine to warrant the undertaking of the acts in question. It is obvious that there is some latitude between emergency cases and cases where instantaneous action is not demanded. Neither is it the simple question of good faith and honest attempt. Otherwise an ignorant person might hold himself out as a physician and surgeon and, using all the knowledge he possessed, as well as exercising his very best judgment, would still be responsible for bad results, provided it could be found as a matter of fact that with his knowledge and training it was a negligent or reckless act on his part to undertake the treatment of the case or perform the operation in question. Using an old illustration, "a man may be a skilled blacksmith, yet he will not be justified in attempting repairs on a watch, for that is work which only a jeweler is capable of performing." Again, a man might be a specialist on throat and lung diseases and yet be incompetent to undertake the performance of a delicate surgical operation on the eye, and if he should attempt such, average men (by which we mean juries) would be justified in deciding that he was highly negligent in attempting a difficult operation, which should not be undertaken except by those who were specially trained for such things, and would be responsible in damages to the patient or his administrator for failure to perform the operation successfully.

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Whether or not he performed the operation in accordance with approved methods would have an important bearing in determining his liability. Negligence is usually a matter of fact, not of law, yet there may be some cases where it is a mixed question of law and fact. "Law" has been defined as "a rule of human action prescribed by the supreme power of the state, commanding what is right and forbidding what is wrong, and applies to all persons alike."

"Facts" are occurrences and events, or an effect produced or achieved.

The law is always a question for the court, while the facts are found by the jury. However, rules of law frequently have to be applied to evidence under the instructions of the court to enable the jury to arrive at a correct conclusion as to what the fact or facts may be.

In the absence of an express contract a physician does not incur liability for failure to accomplish what the patient desires, unless the failure is due to negligence on the part of the physician as before described. I assume that nearly every transaction between physician and patient resulting in legal obligation from one to the other rests upon an implied contract. Implied contracts are those which the law raises or presumes by reason of some value or service rendered and because common justice requires it, and where there is no actual agreement as to terms. If I undertake to do any work requiring skill and knowledge the law says that I impliedly promise and agree that I possess the knowledge and skill requisite to perform the act in question or that which is generally possessed by those of the same class that I represent or claim to be part of, and that I will use reasonable skill and diligence in the performance of the same. If I am a physician of the allopathic school and advertise as such, without any express statement to that effect the law holds that I impliedly contract with my patients to bring to the treatment of disease and the performance of operations a reasonable degree of skill and

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knowledge as recognized by that school, which is all (in the absence of express contract) the patient can require of me. If I belong to the homeopathic school I am governed by their tests.

In a recently well considered case in this state *Speed* vs. *Tomlinson,* 73 N. H., the court held that in the case of a Christian Scientist who undertook to treat a patient for appendicitis: "That one who holds himself out as a Christian Science healer, and is employed to treat disease according to the methods adopted by such practitioners, is only required to possess the knowledge and to exercise the care and skill of the ordinary Christian Scientist." The court further held in their opinion that: "In such an action the plaintiff is not entitled to recover on the ground that the practice of Christian Science is forbidden by public policy, where it appears that he knew the nature of his disease, was familiar with the treatment prescribed by physicians of the regular school, was informed as to the means relied upon by the defendant to effect a cure, and voluntarily employed the latter."

Speed vs. *Tomlinson* was an interesting case, and the facts briefly stated were as follows: Plaintiff was a woman fifty-five years of age, who had suffered from an attack of appendicitis, and employed a physician of the regular school for several months and learned in a general way their method of treatment. She then became interested in the doctrine of Christian Science, and attended the meetings where the defendant, Tomlinson, told of the wonderful cures he had performed. She soon noticed symptoms similar to those that had ushered in the previous attack of appendicitis, visited Tomlinson at his home, informed him of her trouble and employed him to treat her. He told her that a surgical operation was not necessary, that she was not to take any medicine, and that he would cure her if she followed his treatment. He directed her to read "Science and Health," to continue her usual diet of solids and to take her accus-

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tomed exercise. He administered treatment by sitting in front of her in the attitude of prayer, all in accordance with Christian Science methods. She knew that Tomlinson made no claim to any knowledge of medicine or surgery, that he relied wholly upon the power of God to heal disease, and that his advice and treatment were contrary to that which she would have received from a regular physician. We have already seen by the foregoing quotation from the court's opinion that he was not responsible to her in damages, notwithstanding that she was injured by his treatment and finally *had* to submit to surgery and by reason of the Christian Science treatment she had developed into a serious condition before the operation.

Another question may often arise as to what extent a physician is justified in going in performing an operation other and different from the one on which he started out while the patient is under the influence of an anesthetic. An extract from a leading case on that subject (*Pratt* vs. *Davis,* 7 L. R. A. 609) will be of interest, in which the court holds that an express or implied consent is necessary either by the person or by someone legally authorized to act for him.

It is, of course, varied as to what will be deemed an implied consent, according to the condition of the patient under the knife. If, when a physician commences an operation and discovers complications that require another and additional operation, and the case is one in which great danger will be incurred in waiting, then a physician will be justified in acting; otherwise, not.

When a person receives a serious injury and the attending physician starts in on an operation with the knowledge and consent of the patient and he finds that in order to save life or in an attempt to save it he must go farther and that at the time, there are cases where the courts have held that an implied consent is given to the physician to do what seems to be reasonable and necessary for the patient. It

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would seem that the law is a simple exposition or application of the rules of common sense. If, on the other hand, a physician starts in to operate for a certain purpose, with the understanding and approval of the patient, and discovers that, while the subject is under an anesthetic, in the operator's judgment another operation is desirable or even necessary, yet if the circumstances are such that there is no grave danger in allowing the patient to come out of his sleep and decide the matter himself, then the doctor is liable for the unauthorized operation, whether it was beneficial or not. The court holding that "under a free government, at least, the free citizen's first and greatest right, which underlies all others, the right to the inviolability of his person,—in other words, the right to himself,—is the subject of universal acquiescence, and this right necessarily forbids a surgeon or physician, however skillful or eminent, who has been asked to examine, diagnose, advise and prescribe (which are least necessary first steps in treatment and care) to violate without permission the bodily integrity of his patient by major or capital operation, placing him under an anesthetic for that purpose and operating upon him without his consent or knowledge. . . . The patient must be the final arbiter as to whether he shall take the chances of the operation or take his chances of living without it. Such is the natural right of the individual, which the law recognized as the legal one. Consent, therefore, of an individual must be either expressly or impliedly given before a surgeon has a right to operate. . . . If a physician advises his patient to submit to an operation and the patient weighs the dangers and risks incident to its performance, and finally consents, he thereby, in effect, enters into a contract, authorizing the physician to operate to the extent of the consent given, but no farther."

The methods of treatment are committed almost wholly to his judgment, but we are aware of no rule or principle of law which would extend to him free license respecting sur-

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gical operations. Reasonable latitude must, however, be allowed a physician in a particular case, and the law does not lay down any rule which would unreasonably interfere with the exercise of his discretion or prevent him from taking such measures as his judgment dictates in an emergency.

If a person has been injured to the extent of rendering him unconscious, and his injuries were of such a nature as to require a prompt surgical operation, a physician called to attend him would be justified in applying such medical or surgical treatment as might reasonably be necessary for the preservation of his life and limb, and consent on the part of the injured one would be implied. And again, if in the course of an operation to which a patient consented the physician should discover conditions not anticipated before the operation was begun and which, if not removed, would endanger the life and health of the patient, he would, though no express consent was obtained or given, be justified in extending the operation to remove and overcome them."

The present tendency of the decisions is to extend and grant every reasonable right of latitude to a physician. Judge Upton of Iowa says in a well considered case: "The surgeon does not deal with inanimate or insensate matter, like the stone mason or bricklayer, who can choose his materials and adjust them according to mathematical lines, but he has a suffering human being to treat, a nervous system to tranquilize and an excited will to regulate and control. Where a surgeon undertakes to treat a fractured limb, he has not only to apply the known facts and theoretical knowledge of his science, but he may have to contend with very many powerful and hidden influences, such as want of vital force, habits of life, hereditary disease, the state of the climate. These, or the mental state of the patient, may often render the management of a surgical case difficult, doubtful and dangerous, and may have a greater influence in the result than all the surgeon may be able to accomplish, even with the best of skill and care."

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It is almost impossible to formulate any written rule that will determine the question of when a doctor will be liable or not liable to a patient for the treatment he gives or the operations he performs in the different cases that come to him for cure. It has been universally held, as has been before suggested, that a mere error of judgment will not, standing alone, make a physician liable to a patient, unless the error of judgment has been the result of negligence. In *Staloch* vs. *Holm* (100 Minn. 276), a case decided in Minnesota recently, this question is discussed by Judge Jaggard, and we will quote from his opinion: "The distinction between an error of judgment and negligence is not easily determined. It would seem, however, that if one, assuming a responsibility as an expert, possess a knowledge of the facts and circumstances connected with the duty he is about to perform, and bringing to bear all his professional skill and experience, weighs those facts and circumstances and decides upon a course of action which he faithfully attempts to carry out, then want of success, if due to such course of action, would be due to an error of judgment and not to negligence. But if he omits to inform himself as to the facts and circumstances, or does not possess the knowledge, experience or skill which he professes, then a failure if caused thereby would be negligence. . . . Cases of malpractice may be within the exception. A physician entitled to practise his profession, possessing the requisite qualifications, and applying his skill and judgment with due care, is not ordinarily liable for damages consequent upon an honest mistake or an error of judgment in making a diagnosis, in prescribing treatment, or in determining upon an operation, where there is reasonable doubt as to the nature of the physical conditions involved, or as to what should have been done, in accordance with recognized authority and good current practice. . . . The exception does not, however, apply to all that a physician or surgeon may do in the practice of his profession.

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There is often a fundamental difference in malpractice cases between mere errors of judgment and negligence in previously collecting data essential to a proper conclusion or in consequent conduct in the subsequent selection and use of instrumentalities with which the medical man may execute his judgment. In some matters medicine is a science; in others an art. Generally the exception governs cases in which it is a science; the rule, cases in which it is an art. If, for example, a physician certifies that a man is insane without having made an examination, his negligence is of fact and not at all of science. But a 'medical man is not bound to form a right judgment (as to sanity) so as to be liable to an action if he does not.' When the physician is actually operating he is employing surgery as an art; and if, for example, he use an old, rusty saw or if he operate on the wrong arm or sew up a sponge in an abdomen he has opened, his wrong concerns physical facts, and has fairly been held to be governed by ordinary principles of negligence. Where, however, due diligence and skill have been employed in ascertaining the essential preliminary information for an opinion whether a surgical operation should be performed or not, the formation of the judgment in accordance with appropriate scientific knowledge, in a case of reasonable doubt, is within the exception.''

The practical question that you as a physician are interested in is how to protect yourself from lawsuits and vexatious litigation. In this connection I would make a suggestion, the importance of which you will readily appreciate, which is, that in cases of doubt you have one or more physicians with you as witnesses while performing an operation, or even administering an anesthetic if there is any danger of trouble therefrom.

Occasionally a cause will go against a physician on account of the meagre evidence which can be placed before the jury in a given case. This unfortunate result just suggested will come about in some such way as this: A phy-

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sician in treating a patient knows that an operation is necessary. There is no physician handy and all of the witnesses and assistants are made up, either of members of the patient's family, his near friends or untrained attendants or acquaintances. The physician decides on what course to pursue after viewing the patient with the eye of an expert, his experience and training revealing to him many symptoms and conditions of which the unpractised eyes of the other witnesses make no note. The operation is plainly in accordance with the demands of advanced medical science and among physicians there could be but one opinion. Complications perhaps unforeseen set in. The patient dies. His administrator brings suit against the physician for damages based on negligence or active malpractice. If the administrator does not elect to testify at the trial (which they seldom do) the defendant cannot. All the evidence that can go before the jury is the recollection and observations of non-expert attendants, and the opinion of experts given in answer to hypothetical questions based on facts elicited from these non-technical observers. The almost inevitable result in such a case will be that the jury will get only a very faint idea of the exact facts, or an entirely erroneous conception of the actual condition of the patient that confronted and was recognized by the physician. I think this will emphasize the importance of having those present who can give true and complete testimony, which will enable the doctor to have a fair show of securing justice with the non-expert jury, who usually have to struggle with the difficult problem of determining whether the physician defendant acted wisely about a matter of which the jurors have little or no technical knowledge and consequently have to depend on the testimony of experts, founded on a non-expert description, for information on which to base an important judgment of vital interest to the parties concerned.

Another troublesome question occasionally comes up

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where, in the first instance, a physician is slightly negligent and the patient is afterward negligent, causing injury or damage that would not have come about, except by reason of the combined negligence of physician and patient, or, in legal phraseology, on account of contributory negligence by the patient, raising a question that is usually puzzling to deal with in actual trials. "Contributory negligence" has been defined as such negligence on the part of the plaintiff as directly contributes to and in part causes the injury. . . . It is such negligence, strictly speaking, as operates with other negligence in producing an injury and is usually a bar to recovery.

It may be stated generally that a man is responsible for the act of his servants and agents as though he did the acts himself, provided he authorized or directed it.

Thus we might go on almost indefinitely citing cases where a legal liability might arise in favor of the patient. The assessment of damages is an important part of any of these sub-divisions of the main subject, and the rule for determining the same may be stated generally as follows: "A party may recover damages for all actual pecuniary loss, damage or personal injury that may result from the wrongful act or omission of another and which is the natural and probable result of the act or omission complained of, including a reasonable compensation for mental and physical suffering caused by the act or omission in question, and in some cases where the act was willful, then exemplary damages may be awarded, or damages which may be added by way of punishment for the malice displayed by the defendant.

We will close this paper with the simple suggestion that usually your own good judgment, carefully and honestly exercised, coupled with your fidelity to the needs of your patient, will in the future as in the past both prove a safe protection and prohibit such professional errors as will be cause for complaint on the part of those whom you may be called upon to treat.

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DISCUSSION.

DR. E. O. CROSSMAN, LISBON.

I think this is a very full combination of law with reference to the legal liabilities and responsibility of the physician. I have secured the charge to the jury* in the McBride malpractice case, which I at first thought I would read, but which is rather lengthy, so instead of reading it I am going to ask that it may be incorporated into the proceedings of the Society in order that each physician who cares to may not only read Mr. Cobleigh's paper covering the law, but this paper also, which it seems to me is as full as we need. I have always felt personally that there was very little danger from malpractice cases if I did my best and kept away from surety companies. My feeling was that a surety company was a corporation and it was pretty certain to invite trouble, but I found last night that the Concord case would change my opinion; that in the Concord case none of the physicians were insured, so I am in about the condition of an Irish woman I heard of the other day, who was to transfer a piece of property to a friend. The lawyer said, "Bridget, will you please sign your name here?" "Well," she said, "since I lost my glasses I am not able to write." So he took the pen and said, "Tell me how to spell the name." "Spell it any way you like," said she. "Since I lost my teeth there isn't a word in the world I can spell." Since getting that opinion last night I am not able to present any panacea that will serve as a safety to physicians or surgeons who are treating that one class of cases which is more likely to make trouble than any other class, *viz.*, broken bones. It is a very important subject to us. It is pretty vital to a physician that he be able to steer himself along in a way that will not endanger the slight savings that he may have succeeded in getting together for the purpose of taking care of him-

*See Appendix.

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self and family in old age and for the education of his children. There seems to be a general feverish mental condition—public mental condition—that is hard to understand, that seems to be a condition of unrest, a battle on all sides for supremacy, regardless of justice and righteousness. It seems to me, however, in caring for these cases we should use great caution, great deliberation. There is no great rush, as a rule, about a broken bone; there is no great reason why I should take all the responsibility in caring for a broken bone. There are other physicians in my neighborhood and I think it helps to strengthen things if we insist upon plenty of counsel before taking any positive step. If a family, for instance, has some physician whose reputation perhaps is not the highest, as is often the case, but for some reason or other would like to have this particular physician come in and see this broken bone, I would say by all means have him come, or any other physician they may think of. It is pretty hazardous business taking charge of broken bones, and it seems to me the more we can divide the responsibility the better. I heard one distinguished surgeon say a few months ago if this particular case went against the defendants he would never again touch a broken bone as long as he lived. The case did go against the defendants, and I don't know whether he will ever set any more broken bones or not.

There is, I think, a general feeling among the laymen that a great deal more surgery is being done than ought to be done. Very few people realize that the field of abdominal surgery is principally a new departure. Fifteen years ago there was comparatively no abdominal surgery being done. Now a great deal is being done, probably some that might as well be left undone, but a great deal of good is being done along that line. But I do not think we have taken the public into our confidence as much as we should. It seems to me, therefore, if we are going to do anything there should be absolute unanimity of labor, not only

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among physicians, but with all members of the family. If there is any member of a family in authority who feels that a surgical operation ought not to be done, I should feel that it would be a very hazardous thing for any physician to proceed until the family agree and the physicians agree that it ought to be done, thus not conveying the impression that we are in great haste to do these things, but take plenty of time. It is better to err that way, if the patient's life is in no great danger, than to err along the lines of too great haste. Mr. Cobleigh has suggested that the consent of the patient is necessary. I think that is very important, and not only the consent of the patient but everybody else. Then again there is a little danger among physicians that they will not be as absolutely loyal as they ought to be. I believe honestly that ninety-nine cases out of one hundred of malpractice suits that are brought are brought through the influence of some physician. It is not a very pleasant thing to say, but I believe it. The physicians in small towns do not become very well acquainted, and a patient misrepresents to one physician what another physician says, and they get to feeling on anything but friendly terms towards each other. One is discharged and another called in, and by word or manner he gets the impression that the physician last in attendance has not performed his full duty and the family soon conceive the idea that perhaps there is an opportunity, if the doctor has a few dollars, of getting a little money out of him. So I think there should be great care on the part of physicians lest trouble may come to their neighbors. My standing in the community may be absolutely in your hands tomorrow; day after tomorrow your standing may be absolutely in my hands. We don't know where lightning is going to strike. Man's ways, you know, are a good deal like God's, on a smaller scale—hard to understand. The only thing to do is to be absolutely square, absolutely loyal, and if there is any doubt in your mind or mine at all, for

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Heaven's sake give the doctor the benefit of the doubt. Do not indulge in this stage business of expression or loose suggestions that may bring trouble to you or us.

JUDGE JAMES W. REMICK, CONCORD.

Mr. President and Gentlemen of the New Hampshire Medical Association:

I thank you for the privilege and honor of attending this annual convention of your profession, a profession which has done, is still doing, and promises to do so much for the human race. What has been contributed to science and humanity, to society and civilization, by the collective efforts of the medical profession is immeasurable and inestimable. I bring you the regard and felicitations of another profession, which I think you will believe is performing no small part in the world's progress.

But while we may feel a just pride in what has been accomplished by our respective professions, the purpose of these meetings, both of your profession and mine, is not to plume ourselves upon what has been achieved, but rather to rededicate ourselves to the great work in which we are engaged, that generations to come may have occasion to remember our generation with something of the measure of gratitude with which we regard our distinguished predecessors. With the advantage of what has been achieved and the prestige which those achievements give in the world's activities, if we live up to the noble traditions of our professions and make the most of our opportunities, our generation will stand conspicuous in the world's history for its contributions to the welfare of mankind.

That the medical profession may go on from discovery to discovery, ever expanding the range of its beneficent and ameliorating influence, undeterred by fear of injustice, confident of every protection which the law affords, is the wish

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of every citizen of New Hampshire who regards her welfare and the welfare of her people above personal and selfish considerations.

In this view the able paper which has just been read upon "The Legal Liability of Physicians to Patients" has a peculiar and timely interest. Just now our courts are abounding in malpractice proceedings against members of your profession and verdicts are following each other in swift and justly alarming succession against the most distinguished of your number and for amounts, on account of alleged imperfect repair, in excess of the damages awarded for the entire injury against corporations in no more serious cases.

Had the late Harry Bingham at the full tide of his great power as a lawyer been accused and convicted of malpractice in his profession, the event would not have been more notable than some recent convictions which have been obtained against members of your profession.

More remarkable still, some of the convictions are based upon treatment afforded without reward or hope of reward, by way of charitable relief in charitable institutions and in part upon the alleged ground that the appliances of the institution were defective. The institution itself, because of its charitable character, is by the policy of law exempt from liability to its patients, but nevertheless the physician who from the same motives of charity donates his services to the hospital is called upon to pay large damages on account of results. In view of such a condition of things, that you, as well as the hospitals of New Hampshire and their grateful beneficiaries, should feel a keen interest in the subject under discussion is natural; but to assume from this spasm of prosecutions that the law is in unreasonable pursuit of you and that your calling is too perilous to justify undertaking the risks necessary to the welfare of science and humanity would be as unjust to our courts as it would be unfortunate for civilization.

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The supreme court of this state, in setting aside a verdict in a leading malpractice case against one of your profession on account of treatment of a fracture said: "The medical practitioner is necessarily surrounded by doubts and uncertainties and unavoidably exposed to errors and mistakes, which may well furnish a satisfactory explanation of unfavorable results."

Certainly this is not the language of hostility. The verdict set aside in that case was for $1,500. On the second trial the verdict was reduced to $470.29. This verdict was also set aside on the ground that the sheriff furnished a juror who was ill from a gill of brandy, which the juror generously shared with his associates upon the panel. There was no claim that the consideration of the question by the jurors was in any way affected by this act, and of course it was not. The fact that the court should have set the verdict aside on so slight a ground would indicate a disposition to give the reputable physician every reasonable opportunity for defense. The case was not tried again, but, in legal parlance, was marked "neither party," which means in effect that the case went off the docket without judgment or costs.

But the most celebrated case in New Hampshire against a physician for malpractice in setting a fractured leg is *Ordway* vs. *Haynes*. This case was pending in the courts for nearly twelve years, went to verdict several times and to the supreme court five times. The first verdict was against the physician for $2,091.36. A writ of review was sued out and on the second trial the damages were reduced to the sum of $687.50. This verdict was then set aside and a new trial had, in which a verdict was rendered for the physician, totally reversing the former verdicts. The physician then recovered of the plaintiff for the medical services as to which malpractice had been alleged.

It may be reassuring also that Dixi Crosby, so celebrated in the surgical annals of New Hampshire, was tried for mal-

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practice in connection with a fractured leg and finally acquitted.

These illustrations of the course of justice in the most celebrated cases concerning your profession may well give you assurance that should you be so unfortunate as to be sued for malpractice, you will at least have every opportunity for defense which the limit of judicial discretion will afford.

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Hydrotherapy.

A Plea for the Study and Rational Use of Water in Disease.

J. B. MACDONALD, CONCORD.

In these days of medical progress, when even the dynamic value of an idea in conquering nature and disease is weighed and measured in therapeutic terms, the medical waste-basket is undergoing a searching scrutiny. And from the mass of rubbish accumulated through the ages some things have been drawn forth by the scientific investigator and again proven worthy of the trust and favor of the profession. Of all these perhaps the use of water in the treatment of disease creates the widest interest. The oldest of all remedial measures, it has also been until a late day the most neglected and often the most derided by the medical profession. Its practice had fallen for a time into the hands of quacks and "irregulars," and until the results from their empiric exercises forced us to recognize the usefulness of certain of their procedures, we chose to remain virtuously aloof from such evil associations. For as a profession, we are too apt to walk rather contentedly in a little lighted circle of prejudices and have to be reminded of what lies without us by specious and clamant exceptions; so that the quack and the "irregulars," with their "Turkish bath parlors" and so-called "water cures" stand in relation to modern hydrotherapy much as Mesmer, Phineas Parker Quimby, Mary Baker Eddy and Christian Science in

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the pedigree of psychotherapy, which in many quarters is regarded as the finest off-shoot of a common family tree.

Water, properly applied, is a most powerful therapeutic agent, and the results from its judicious usage are often little short of marvelous. Yet it is so flexible an agent it is capable of evoking many varying and even apparently contradictory effects, and here lies the cause of so many disappointments and failures to obtain expected results, where the physiological action of varying temperatures is not carefully considered, and refinements of technique are neglected. Unlike other remedial agents many distinct elements are involved in its dosage. Each case is a law unto itself as regards the reactive capacity to temperature. By varying the temperature of application, mechanical impact, duration and technique of application in a given case the action may be stimulant or depressant, sedative or tonic, or it may be chiefly a diaphoretic, diuretic, antipyretic, etc. No other remedy furnishes a wider range of physiologic and therapeutic action.

The term hydrotherapy includes the application of water for remedial purpose in any form internally or externally. The value of irrigations, hypo- and enteroclyses is well known, but the application of water to the external surface of the body (exclusive of toilet and cleansing purposes), though the most important form of hydric procedure, is still not everywhere understood or studied, nor employed to the extent it might be in general practice.

The basis of such external applications is the physiological action of varying temperatures upon the body, water acting simply as a convenient means for the conveyance of temperature in the simplest and most universal manner. This action is that of an irritant or a thermic stimulus to the cutaneous surfaces and their sensory nervous apparatus, and the result is a change in the local innervation through the ganglionic centers and a reflex or vasomotor influence through the central nervous system. The influence of

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cutaneous irritants or stimuli upon circulation and respiration and upon tissue change and secretion is a very interesting subject. The cutaneous surface, with its sensory nerve terminals, may be regarded as a perfect alarm apparatus, not even a pin point of it being left unprovided. The response to sudden stimuli, such as cold, is instantaneous. There can be no doubt but that the factors which produce arterial "tone," and the peripheral resistance which plays so great a part in maintaining blood pressure and cardiac force are dependent largely upon such impulses from the peripheral nerve terminals to the vasomotor center. The shock to the peripheral nerve endings arouses and energizes the nerve centers. The forces which, under vasomotor influence, produce peripheral resistance lie in the heart and in the muscle cells and elastic fibres of the vessel walls, and in the muscular and elastic elements of the skin, whose condition of tension depends largely on temperature. No other agency is capable of rousing these forces to action with greater promptitude and certainty than cutaneous irritants. As to the truth of this statemen, ask the obstetrician, who in the critical moment in the life of an asphyxiated infant employs mechanical irritation in the form of slapping, or thermic irritation by dashes of cold water, or alternate plunging into hot and cold water to stimulate and restore suspended vital activity.

There is a growing conviction that the elastic and muscular coats of the blood vessels have higher functions than that of merely mechanical regulation of caliber, that these muscle cells are capable of rhythmical rather than sustained and tonic contraction, and that the phenomenon of reaction is but an expression of enhanced activity of this great "skin heart," as Dr. Woods Hutchinson calls it. This rhythmic activity is especially sensitive to cutaneous irritants applied in the form of heat and cold.

It is hard to explain the wonderfully tonic and prolonged effect of a Brand bath in typhoid fever other than by assuming an active rhythmic contractility of the skin vessels,

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which are capable of containing about thirty per cent. of the blood of the body, and which thus relieve the work of the heart and promote elimination and secretion. In the wards of the New Hampshire State Hospital we have demonstrated over and over again that a short, cold bath, with friction, lowers the pulse rate markedly, improving its tone and increasing its tension. I have here a chart of one case where a modified cold bath with friction was given regularly once a day. The pulse rate was taken at hourly intervals, before and after the application, and almost without exception the reduction in rate continued for three and four hours after the bath. Such a prolonged improvement in the character of the pulse can hardly be accounted for on any hypothesis granting no more than a passive activity to the cutaneous vessels, next to the heart the main factors in blood pressure.

Cold applications excite and warm applications diminish irritability. Cold applied locally over the heart or to the entire body lessens the frequency, increases the force of cardiac contraction, and raises blood pressure. Warm irritants increase the pulse rate and lower the blood pressure. Following warm applications there is a dilatation of the cutaneous vessels because the muscular and elastic elements of the skin, which play the part of a muscular coat to its arterioles and capillaries, are relaxed. By surrounding the body with a temperature higher than its own, as in hot water baths, hot air and electric light baths, there is effected an increase in metabolism, especially in the breaking down of non-nitrogenous substances. Perspiration is increased. The conductivity of nerves is impeded, so that they convey impressions less readily. The effect of prolonged warm applications is relaxing, fatiguing, soporific, while that of cold, especially when combined with sprinkling, showering or rubbing, is powerfully stimulant, exhilarating and tonic.

"Immediately a cold application is made to the skin we

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have through the cord and brain centers certain immediate results. We have first contraction through the vasomotor nerves of the superficial vessels of the skin, stimulation of the heart and the force of its contraction. Secondarily by reaction we have an enlargement of the capillaries of the skin. The rhythmical activity of the peripheral vessels is increased and the arterial tone improved. We have also as a secondary process of reaction increased metabolism, with increase of animal heat. The increase of animal heat, we know, comes largely from the muscles and glandular organs, and we get through this stimulation by cold of the nerves of the skin a more vigorous and healthy action of the glandular organs of the body, including the digestive and secretory organs generally. In the reaction from cold water applications are involved several processes worthy of careful study. One has just been referred to. Another relates to the general equalization of vascular pressure (relief of passive engorgement) with what may be termed gymnastic exercise of the vascular musculature. Another relates to stimulation of paretic vasomotor centers, and another to direct stimulation of centers in cord and brain through the sensory neurones, whose terminals are in the skin." (Foster.)

The deeper respirations, which always result from cold applications, introduce an increased amount of oxygen into the system, while it has been demonstrated that the respiratory quotient remains the same; that is, while the amount of O. absorbed may be three or four times the usual quantity, the amount of CO_2 eliminated is proportionate to the O. absorbed, showing plainly enough that the increased intake of O. is used in processes of metabolism.

In ordinary fevers and toxemic conditions retained excretions and specific toxins cause an increase of the extractives in the blood to several times their normal amount; and the quantity of urine is always diminished. Albert Robin, in a series of experiments on typhoid patients, demonstrated

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that the accumulation of wastes in the tissues in that disease was proportionate to the gravity of the case. He found the solid constituents of the urine rose from forty-eight per thousand in the height of the disease to sixty per thousand in convalescence. The extractives in the normal blood amount to from 4 to 4.5 per cent. In mild cases of fever he found them to be 6.5 per cent., in fatal cases 12.1 per cent. In one thousand analyses on more than one hundred cases of typhoid he showed that on an average a typhoid patient who absorbed for each kilogram of weight 5 c. c. of oxygen per minute before a cold bath treatment increased the amount of oxygen taken up to 6.49 c. c. immediately after the cold bath. The CO_2 exhaled increased from 3.77 c. c. to 4.45 c. c., while the urine was augmented in quantity, and the urea increased ten per cent. and twenty per cent.

What obtains in typhoid fever is in some measure true of all toxemiæ, and of conditions where, as a result of relaxation of the vascular system, there exists decreased oxidation and elimination.

Our ideas regarding the uses of hydrotherapy have changed materially within recent years. Formerly we administered a cold application in fevers for antithermic effect. Now we administer it for the purpose of obtaining "reaction," and the reduction of fever is but an expression of reaction attained, for cold in itself promotes metabolism and therefore increases animal heat. Our point of attack is the intoxications resulting from infective processes, and from disturbances of metabolism, which produce not alone high temperature but the serious degenerations formerly ascribed wholly to it.

The same principles of treatment by water, which yield such brilliant results in acute conditions, like typhoid fever, pneumonia and nephritis, are also applicable in a modified form to those chronic states in which elimination, nutrition, blood formation and tissue change are disturbed. Our

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insane hospitals contain hundreds of cases whose morbid mental conditions are the result of toxemia, whether through intoxication arising from evil modes of living, defective gland secretion, autointoxication from the intestinal tract, or from renal or hepatic insufficiency. Take, as an instance, melancholia, where the disturbance of alimentary, circulatory and excretory systems are most notable. Here the tongue is coated and foul. There is no desire for food. The digestive power of the stomach juices is reduced. The bowels are invariably constipated, and the stools are abnormally offensive. The skin is cold and clammy, or hot and dry. Urine is scanty and passed at long intervals. The excretion of urea is deficient, on an average below 200 grs. for the twenty-four hours. The pulse is rapid and irregular in force and rhythm. There is nothing in the whole field of medicine that will assuage the distressing mental pain and confer a mite of comfort upon the patient more promptly than a warm or hot bath (the former at 98° F. to 100° F. for one half to one hour, the latter at 105° to 110° F. for ten or fifteen minutes), or a dry or wet pack, general or local, to promote cutaneous hyperemia, warmth, and free perspiration, followed by carefully prescribed cool sponging, with brisk rubbing, to produce vascular reaction. After such measures, it is not uncommon to find an improvement of mental conditions coincident with an increased excretion of urine and urea. It aids in the elimination of waste, and along with diet, saline laxatives, irrigations, tonic and restorative measures, is our most powerful auxiliary in effecting organic purification.

In drug intoxications, especially that from opium, the value of hydric procedures cannot be overestimated. During the past two years we have had two such cases in the New Hampshire State Hospital, and in each case the drug was withheld entirely from the day they were admitted. One had a habit of ten years' duration, the other of five

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years. Yet there were none of the serious symptoms of deprivation, because, as we hold, from the beginning of treatment tonic hydrotherapeutic measures had been applied.

Some of our most striking results have been obtained from a modified form of cold bath with friction, or the "Brand Bath," as we call it in our wards. In certain cases of acute mania, the excited phases of dementia precox, and in other toxic insanities, where the physical condition is not yet greatly depreciated, this is our treatment of choice. The patient is first enveloped in a dry blanket pack for one half to one hour, or a hot spray bath of three to five minutes' duration is given, so that an artificial surface heat is produced. From the spray or pack the patient is then immediately transferred to the tub filled with water at a temperature of 75° to 90° F., according to the patient's condition and reactive capacity. The face is quickly bathed with cold water, and a towel wrung out of cold water wrapped around the head. He is then immersed in the water up to the neck, and friction or chafing is begun over the entire body and kept up vigorously while the patient is in the water. At least three nurses are assigned to make friction, two for the upper extremities and trunk, and one for the lower extremities. Friction is of supreme importance to ensure reaction, for without reaction the bath may do more harm than good. As the effect desired in these cases is mainly reflex nervous excitation, the duration of the bath is not longer than three to five minutes. At the completion of such a bath the cutaneous surface fairly glows, as constantly recurring contraction and dilatation of the vessels is maintained by the thermic effect and by the mechanical stimulus of friction. On being removed from the bath the patient is rapidly dried, placed in bed, and covered warmly with blankets. A glass of hot malted milk is given. The relief afforded by this measure is remarkable. The excited, noisy, almost unmanageable patient

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quiets down, and almost always falls asleep. No one who has not seen an excited acute maniac sleeping quietly for six or seven hours after a bath of three to five minutes' duration, thus administered, can have any conception of the wondrous change effected. So constantly has sleep followed such treatments in selected cases that in our practice they are generally administered in the evenings in order to secure natural rest for the excited patient, and to promote the comfort of others subject to disturbance by their noisy behavior. Sleep has been produced by this means where large doses of veronal, hyoscin and dormiol have been ineffective. And it has been more natural, more prolonged, and with none of the undesirable after-effects of even the best form of drug hypnotics. We are convinced that under this treatment the general condition of the patients improves, their vital resistance is increased, circulation and glandular activity becomes better, and the assimilation of food and of tonic and alterative drugs is promoted.

In other cases prolonged warm or neutral baths, hot baths of shorter duration, sprays, douches, and packs are powerful eliminants, and have a decidedly soporific influence. In this connection I may mention anemia and chlorosis, where often the assimilation of iron is greatly promoted by such measures.

In speaking of these measures I have used the term "cold" loosely for any procedure where the temperature of the medium is below 90° F. The term "cold" thus employed must be understood in a relative sense depending upon the reactive capacity of the patient. The greater the variation of temperature between the water used and the body, the greater the thermic irritation; and one should not apply the same degree of temperature to an anemic, neurasthenic woman that may be found useful in the case of a strong, active, acute maniac any more than you would give the same dose of strychnia to an infant that acts as

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a stimulant for the adult. When a hydrotherapeutic treatment is ordered, the temperature of the water and the technique of application should be prescribed with the same care and consideration as in the ordering of drugs. Nerve stimulus and not abstraction of heat is the end to be attained in these tonic measures, and while in one case simple ablutions of successive parts with water at 80° F., with friction, may be all that the reactive capacity of the patient will stand; in others immersion may be essential to secure reaction. In every case it is well to begin with gentle measures, and as the general tone of the system improves advance to more vigorous procedures. Cold applications, to fulfill their function, should be of short duration, and always accompanied by friction. They should be preceded by some measure for the production of surface heat, and the temperature of application carefully graded according to the amount of shock the patient can safely bear.

I am sure that every one of us meets with many cases where, in addition to drugs and general hygienic treatment, hydrotherapeutic procedures may be used to advantage. If the stranded wrecks in our insane hospitals can be benefited, in some cases cured, by the aid of such measures, how much may be accomplished before the system has broken down to the degree that even the mind is deranged. Simple as these procedures may appear, however, a careful study of the physiological principles involved, and an exact technique of application is necessary, else the clinical results cannot fail to be disappointing and more often harmful.

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DISCUSSION.

DR. C. R. WALKER, CONCORD.

It seems to me a paper of this kind in general practice is indeed the most valuable and helpful one. Hydrotherapy has been in vogue, if we may read the history aright, from the very time when history began to be written in regard to the methods of life and mode of living among all nations. The factors of heat and cold were recognized. We have, of course, no idea that the ancients knew just why heat and cold affected the body so, but surely they did use baths. All savage nations have used baths, and water has been used in all forms, not with the refinement that our modern time enables us to use it, but practically to give the same effect. Water, for its therapeutic use, demands time of the practitioner and personal attention in order to get the best results. I may be pardoned perhaps if I read two or three extracts which I have made in order to emphasize what the doctor has already brought out as to what can be accomplished.

The simplicity of this agent and neglect of precision in its application have been the chief obstacles in the way of its more universal acceptance. At the risk of not being understood, it has occurred to me that sometimes the new ideas which come up, if we have used them in some special case, may suggest some other idea. I had a case of sepsis, which Doctor Macdonald was kind enough to see with me. With the double injection tube, the Kemp tube, this patient was enabled to be made comfortable, the restlessness was diminished and quiet was produced by the frequent re-connection of the tube. Gallons of water were run through this tube and the lower bowel was irrigated. I simply speak of it as one special matter. It is the kind of case that may occur to some of you, and I feel positive that you will give

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the patient relief by the constant inflow and outflow, without any discomfort whatever.

DR. F. N. ROGERS, MANCHESTER.

This subject has been well covered by Doctor Macdonald. It is more than interesting to me, and Doctor Macdonald has brought out the keynote of the paper. The necessary thing to be brought about by the application of water is reaction, and although it is considered somewhat dangerous, yet if this reaction is not brought about the hydrotherapy measures may prove futile.

In the past year we had in Manchester an epidemic of typhoid fever, and two of the thirty cases which I had under my care would not bear the cold baths in any way. Instead of lowering the temperature it raised it and the patient got cyanotic after the treatment. The cold bath had to be discontinued; simple friction baths, distributing the blood, stimulated the skin and promoted the evaporation of perspiration.

There is just one case I can think of that was interesting to me. I had a case of a business man who had acute alcoholism. He wanted to get back to work the next morning. I knew he could not, but told him I would get him out of it as soon as possible, and started in with as hot a bath as he could stand. I knew it would weaken him a good deal; in fact I wanted to. After using a good deal of friction and giving a solution of sulphate of magnesium he got so weak that he dropped off to sleep. I had to give him a hypodermic of strychnine before I dared to leave him, but the next morning he was pretty near well and most ready to go to work. Doctor MacDonald mentioned the fact of the application of water to the skin producing sleep. I think that is very good in all fevers from alcohol or disease.

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DR. H. W. N. BENNETT, MANCHESTER.

I will speak of an incident which occurred in the Rhode Island Hospital. It was a case of tubercular trouble. The parents refused to have the leg amputated. They had consented to the entire removal of the bones of the leg, the only thing to be done, but this did not reach the seat of the disease. It was a pitiful case. The entire leg was swollen several times its natural size and the skin was almost on the point of breaking, and there were a dozen or fifteen places through which the pus exuded. It was dressed about three times a day and it was pitiful to hear him cry, even under the slightest movement. You could not do a decent dressing on the boy. Finally it was considered that nothing could be done to save his life, and it was only a case of making it as painless as possible for him during his last days. So we rigged up an apparatus in a bath tub and immersed the boy to his neck. He staid there under a nurse's care a day and a night. The temperature was practically that of the body, as near as we could get it by the thermometer. Nobody expected the boy would live. We thought it would enable the pus to get out of the wounds and it would be more comfortable for him. To our surprise the boy picked up immediately and began to gain, and finally in about eight days Doctor Mitchell said, "I believe that boy is going to live. I am going to see his parents and try and get permission for amputation." It was a hip joint operation and the boy had improved to the extent that it was possible to do the operation after that. Of course he collapsed and required care for forty-eight hours, but he did survive, and when I came back from my vacation in a little over a month, the first thing I saw was the boy, who came into the ward on a wooden crutch and one leg.

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DR. F. L. GERALD.

Something like eight years ago a young man came to me on crutches. His lower extremities were paralyzed. He had typhoid fever in the hospital at Springfield, Mass., and two young physicians had the care of him. They packed the whole length of his spine in ice. When he came out of the hospital he was paralyzed, and it was three or four years before he recovered. So it seems to me that brains and common sense should back up this treatment with water as well as medicine.

DOCTOR MACDONALD.

It seems, at times, that in the matter of physical therapy the profession, while accepting the principles of such treatments, have been slow to put them into practice. From this there has sprung up a crop of evils. Such negligence on our part has been, I believe, largely responsible for the birth of at least one distinct school of medicine, with nothing on earth in its justification but the more thorough study and application of passive exercises and manipulations.

The use of water in treatment is in like manner somewhat neglected. Some hesitate to apply what they believe to be a rather heroic measure. Others have a prejudice against it, having perhaps known evil results from careless prescribing and imperfect technique. Again, our schools have not given much attention to physical therapy. Yet it is a field that well repays study and investigation. True, as Doctor Gerald remarked, "Brains and common sense should back up the treatment," and I would add the use of these should precede the treatment. The possession of this essential equipment should insure at least a study of the effects of temperature and of different methods of technique before administering an application so powerful of action that serious harm may result if it is carried on unintelligently.

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Milk and Its Relation to Disease.

BY H. W. N. BENNETT, A. B., M. D., MANCHESTER.

Milk is the first food which we use on entering this world, and unless we suddenly depart this life, it is very apt to be the last partaken of before leaving it. Between these two extremes it forms a constant factor in our health, our means of preventing disease, and of nourishing our patients through acute illness.

Although important to all, it is especially important to infants and invalids. This applies to all classes of individuals, but especially is it true that that portion of our population which raises the greatest number of children and furnishes the greatest incidence of diseases is unfortunately the class that receives the poorest grade of milk, which at the very best is far from what it should be.

We buy our milk in the belief that we are getting a food, pure, healthy and nutritious. In reality we too often receive a mixture of fecal contamination and virulent bacterial poisons, loaded with potential death.

The bacterial content of market milk in different cities varies. As an example of what a city milk supply should not be, let us consider Washington, D. C. For the summer of 1906 the average bacterial content was 22,134,000 per C. C. and of 1907 11,270,000 per C. C. Boston counts show 50,000,000 rarely. Counts in the United States have on occasion shown a content over 307,000,000.

Milk is supposedly a clean and healthful fluid. On the other hand, sewage is considered to be the quintessence of

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filth. A comparison of the bacterial content of each is interesting.

Sewage of	Average for	Bacteria per C. C.
Boston, Mass..	1894–1901	2,800,000
London, Eng.	1894–1901	2,000,000 11,000,000
London, Eng., crude sewerage	1898	3,000,000 to 4,000,000
Lawrence, Mass.	Sept. 24 to Oct. 24	3,034,000
St. Mary's, Ohio	16 samples, 1907	5,000,000
Westville, Ohio	16 samples, 1907	2,350,000
Union, Ohio	16 samples, 1907	239,000

(Bul. 41, Hygienic Lab., P. H. and M. H. Service, page 421.)

The above shows that as far as the mere number of bacteria is concerned the sewage of our large cities compares very favorably with much of our market milk.

Milk, unfortunately, is an opaque substance. Were it a transparent fluid our market milk would show evidence to the naked eye of its condition and would be considered unfit for food on account of self-evident putrefactive and fermentative changes.

Similar amounts of bacterial growth of whatever nature in broth, gelatine, beer, jelly, etc., would result in its condemnation even by the untrained eye.

High infant mortality is to be expected from ingestion of a food with a high bacterial content, for the normal intestinal mucous membranes are permeable to bacteria, and this is especially so in the infantile period. It explains the difference in the mortality rate between breast fed and artificially fed infants.

Huntington (Am. Journ. Med. Sci. XXXII, pp. 811–835) reports the death rate of breast fed and artificially fed children in Berlin:

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	Deaths under 1 yr., feeding known.	No. breast fed.	Per cent. of deaths, breast fed.	Per cent. of deaths of not breast fed.
1900	9,558	895	9.36	90.6
1901	9,378	956	9.17	90.8
1902	7,027	768	10.17	89.10
1903	7,680	723	9.41	90.59
1904	7,780	753	9.68	90.82

K. Helle (Archiv für Hygiene, 1905, VI, 18) shows that in the city of Gratz out of one hundred and seventy deaths from intestinal diseases in the fiscal year 1903–'04 only four were breast fed, forty-eight partly breast fed, one hundred and seventeen bottle fed.

Kastle and Roberts (Joseph H. Kastle and Norman Roberts, Bul. 41, Hygienic Lab., P. H. M. H. Service) summarize this work very concisely as follows: "It has been shown that milk and milk products may also contain a large number of bacteria, each of which produces its peculiar toxin (Vaughn Mich. State B. of Health, 1896, 397–401).

"This, according to Novy (Osler's Modern Medicine, Phila. and New York, 1907, 241–243) is especially the case with the enteritidis group of bacteria, which by their growth do not curdle the milk, but render it somewhat transparent. According to Vaughn, the summer diarrheas of children are not due in all cases to a specific microorganism, but to the poisons developed in milk by many different bacteria. Such diseases are found almost exclusively among children that are artificially fed and occur chiefly in hot weather, for the reason that high temperature is essential for the growth and wide distribution of these toxicogenic organisms.

"To Flugge (Vaughn 20th Cent. Practice of Medicine, N. Y., 1898, XIII, 50–52*) we are indebted for some of the most valuable contributions to our knowledge of the toxi-

* Dr. Vaughn assures the author that to the present time Jan. 1908 nothing of particular importance has been added to the knowledge of the milk poisons.

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cogenic bacteria of milk, especially the peptonizing bacteria He isolated and studied twelve species. Three species were found to develop poisonous substances. Cultures of No. 1 in subcutaneous doses, 0.5 C. C., were found to kill mice. When milk containing this organism was fed to dogs similar disturbances set in in about one hour. Milk culture of bacteria No. 3 produced diarrhea in puppies, followed in one case by death on the third day. The filtered culture of bacteria No. 7, after concentration to one fifth of its original volume, caused death in mice and guinea pigs in six to twelve hours, and even the unconcentrated milk culture of this organism acted powerfully when fed to puppies. In market milk Flugge frequently found these poisonous peptonizing bacteria in practically pure culture. Further investigations have been made by Vaughn and also Luebbert. Luebbert finds them widely distributed (Ibid, p. 52, 55), to act only on the proteid of milk, leaving the fat and milk sugar untouched. Their milk cultures are highly toxic and when fed, guinea pigs died after four days, puppies after four and a half and six days, following severe diarrhea. A fully grown dog partook of the milk freely without any symptoms, showing that age furnishes some protection.

"Vaughn (Ibid 53, 54) confirms this and believes that the organisms responsible for cholera infantum are truly pathogenic, in that they produce a definite chemical poison, the absorption of which is followed by the symptoms of the disease. He attributes the great susceptibility of children to such intoxications to the ease with which the intestinal mucous membranes of children absorb casein, the casein carrying along with it the bacterial cells containing this poison.

That the milk supply is responsible for a large proportion of the infantile death rate is shown by the decrease in said death rate when attention is paid to milk.

Goler in Rochester has decreased his count to 200,000 and

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cut his death rate of infants in two. In Washington, D. C., before the milk law was passed the death rate of diarrhea and enteritis under two years had increased from a five year average of 1.62 per 1,000 adults in 1880–8 to five year of 1.75 in 1890–94. Since then it has steadily fallen, and in 1906 was .97, thus again demonstrating the close relation between milk and the mortality rate.

From infancy we pass to childhood. Here we find two important acute diseases, diphtheria and scarlet fever, whose contagion is conveyed by milk. When thus conveyed they are epidemic. To the epidemic class must also be added typhoid fever.

That milk is not an uncommon means of infection is shown by Trask, who has abstracted and reported in detail five hundred epidemics. This is but a portion of those in the literature.

Milk-borne epidemics are extremely sudden in onset; explosive is a term often applied. A definite amount of milk becomes infected. If this is delivered by itself the outbreak is very limited in extent.

Often, however, this milk is carried to some central point and mixed with a larger supply. Here again one of two conditions may occur. If the mixed supply is immediately cooled and kept at a low temperature, 40°–50° F., until consumed, there will be but a small number of persons affected, those extremely susceptible to infection at that particular time, or those who have ingested a large amount of the infected milk, the others escaping by the dilution.

If, on the other hand, the milk is permitted to reach a temperature of from 60°–70° F., or its consumption is delayed, each bottle may be more dangerous than the original milk.

As milk is consumed in twenty-four hours after the lapse of the incubation period, we may expect nearly all the cases infected on the first delivery to break out on the same day and on subsequent days as long as the milk supply is

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contaminated we may expect a new crop. Subsidence would, of course, be equally prompt upon exclusion of the infected source, allowing, of course, for secondary cases.

When an epidemic is milk-borne the incubation period is shortened. Typhoid normally has an incubation period of about fourteen days; scarlet fever and diphtheria, three to five days. Numerous milk-borne epidemics of scarlet fever and diphtheria, have revealed themselves in a few hours, and typhoid in a few days. In Great Harwood in Lancashire, in 1895, the incubation period of typhoid was as short as two days. This is due, possibly, to the fact that milk is a good culture medium; that the germs increase in virulence and number; that large numbers, together with their toxins ,are ingested by the individual.

Clinical characteristics of milk-borne epidemic are also interesting. As a rule, they do not carry a heavy mortality rate and clinical signs and symptoms are also light. In scarlet fever the disease is generally mild and simultaneously with its outbreak is an occurrence of a large number of ordinary sore throats. Even in scarlet fever cases, the tendency is to remain localized in the throat, the rash may be evanescent and the desquamation scanty. There is also a marked absence of postscarlatinal nephritis, or any other renal complications. Vomiting and diarrhea are particularly frequent, especially at the commencement of the disease, and suggest at once alimentary origin.

There is also comparative indisposition of the disease to spread by contagion, due principally to the slight desquamation and to the fact that a large proportion of the infection is eliminated from the body by the vomiting and purging. It is also noticeable that in such milk-borne epidemics of scarlet fever people who have partaken of the infected milk and have had scarlet fever before have simply a sore throat, no elevated temperature, rash or vomiting, while those not having had scarlet fever, in the same family, have typical scarlet fever.

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In diphtheria and typhoid the ordinary course is the same, only somewhat milder.

"Milk-borne infection follows the milk cart. Certain streets, certain houses and certain tenements become infected always in some measure because they come in contact with the infected milk. Occasionally a house outside is infected and inquiry develops that in some way the milk has obtained access to the family or individual."

The higher the social position, the greater the incidence of disease, because the poor use their milk in small quantities and only in tea and coffee, etc. The middle and upper classes consume larger quantities of milk. In one diphtheria epidemic, out of three hundred and seventeen persons of the better class one hundred and five, or 53.19 per cent., were attacked; of the lower class only fifteen out of the two hundred and thirty-nine, or 6.3 per cent., were attacked; of adults, 29.3 per cent. of the better class against 6.2 per cent. of poorer class; of children, 34 per cent. of better class against 6.4 per cent. of poorer class. The occurrence of disease is proportional to the amount of milk consumed. When the large milk drinkers of a family alone are attacked, attention should at once be directed to the milk supply.

In an epidemic at Iowa State College the attack rate was 8.8 per cent. The football team was served with a double allowance of milk and the rate jumped to 50 per cent. and over, an increase of over 40 per cent.

At Eagly (1861) fifty-nine families were supplied with infected milk, resulting in 96 per cent. attacked with typhoid; out of two hundred and sixty-one not so supplied 5 per cent. only were affected.

The incidence of disease when conveyed by milk is illustrated by record of outbreak of scarlet fever and sore throat at Wimbleton, Eng., Dec. 25, '86 (Switherbank & Newman Bacteriology of Milk).

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Customers.	Number persons attacked in week ending					Total.
	Dec. 25.	Jan. 1.	Jan. 8.	Jan. 15.	Jan. 22.	
Infected Dairy.						
1,400–1,500	4	425	62	2	.....	493
Other Dairies.						
10,000–15,000	6	6	29	11	.....	52
Total.....	10	431	91	13	.....	545

SCARLET FEVER, WIMBLETON AND MERTON, 1886–'87.

Amount of infected milk daily per household.	Total houses.	No. invaded.	Invaded per cent. of total.	Total persons.	No. invaded.	Invaded per cent. of total.
Less than 1 pt..	81	39	48.1	315	68	21.6
1 to 1½ pts.....	102	62	61.7	472	162	34.3
2 to 2½ pts.....	43	32	76.7	207	87	42.0
3 or more.....	48	39	81.2	362	169	46.6

SCARLET FEVER, UPTON, 1889.

Average daily amount of milk used per household.	Total.	Attacked scarlet fever and sore throat.	In males.	
			Under 15 yrs.	15 yrs. and above.
1 pt. and upward.....	9	8	10	30
¾ pt. and under 1 pt.....	16	12	35	62
½ pt. and under ¾ pt.....	37	21	37	123
And ½ pt.....	38	17	68	127
	100	58	150	342

SCARLET FEVER, UPTON, 1889.

Cases.			Per cent. attacked.	
Scarlet fever.	Diphtheria.	Sore throat.	Households.	Persons.
8	.....	12	89	50
11	1	21	75	34
10	1	34	56	28
9	.....	16	45	12
38	2	83	58	25

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INCIDENCE AS REGARDS POSITION IN SOCIAL SCALE SAME OUTBREAK AS ILLUSTRATED BY THE RENT VALUE OF HOUSES SUPPLIED BY THIS DAIRY.

Houses Renting £10–15.		£11–30.		£31–40.		£41 and up.	
Total houses.	Numbers invaded.	Total houses.	Numbers invaded.	Total houses.	Numbers invaded.	Total houses.	Numbers invaded.
44	17	120	73	50	40	55	42
	38.69%		60.8%		68.9%		78.2%

Page 265, S. & N.

RELATION OF AMOUNT OF PARTICULAR MILK CONSUMED TO INCIDENCE OF DISEASE IN EPIDEMIC AT WIMBLETON AND MERTON, 1886-'87.

Amount daily per household.	Total houses.	No. invaded.	Invaded per cent. of total.	Total persons.	No. invaded.	Per cent. invaded.
Less than 1 pint	81	39	48.1	315	68	21.6
1 to 1½ pts.....	102	62	61.7	472	162	34.3
2 to 2½ pts.....	43	32	76.7	207	87	42.0
3 or more pts....	48	39	81.2	362	169	46.6

Ibid.

Konradi in 1905 (Centralb. F. Bakt., etc., 1 Hbt. Bd., 40, p. 31) isolated the typhoid bacillus from milk in Kolozsvor; an epidemic being prevalent in that city. Nothing could be found wrong with the water. All cases seemed to start from a certain bakeshop. Subsequently the typhoid bacillus was isolated from a sample of milk taken from this shop. Measures were immediately taken against both shop and milk, and the succeeding month the number of cases fell to the usual number. Of thirty-two other samples, the bacillus was isolated from one where the farmer's son had mild attack, not severe enough to prevent his milking the cows. Typhoid bacillus was recovered from artificially infected milk seven days after inoculation, by Cautley.

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Bruck, 1903, ran infected market milk through a separator, and found the organism viable in the cream. Ten days later the cream was made into butter and the organism was found viable for twenty-seven days. That the typhoid bacillus will not only live but multiply in milk is shown by Eyre. (Journ. State Med., London, 1904, XII, p. 728.) The milk was drawn from a healthy cow after inoculation under aseptic conditions.

AFTER INOCULATION.

0 hrs.	2 hrs.	4 hrs.	6 hrs.	8 hrs.	12 hrs.	24 hrs.
78	40	42	42	46	460	6,000

Another count, at higher temperature, resulted as follows:

0 hrs.	24 hrs.	48 hrs.	7 days.
78	60,000	10,300,000	440,000,000

The bacilus typhosus will also live in milk soured at room temperature.

Trask has compiled one hundred and seventy-nine typhoid epidemics spread by milk, one hundred and seven of which occurred in the United States. In ninety-six of these epidemics all cases were reported as living in houses supplied with the infected milk.

A case of typhoid existing at such a time as to be a possible source of infection was found at producing farm distributing dairy or shop in one hundred and thirteen cases; bottles returned from infected houses and refilled without sterilizing in four; diseased persons handled the milk or utensils in two; diseased persons milked the cows in six; the same persons milked the cows and nursed the sick in ten.

Schuder reports six hundred and fifty typhoid epidemics, with cause reported:

Four hundred and sixty reported spread by water.

One hundred and ten reported spread by milk.

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Seventy-eight reported spread by all other means.

These figures are mainly from Continental Europe, where the milk is either pasteurized or boiled, and where, too, until recently, milk has received little consideration as an etiological factor in typhoid epidemics.

Car reported in 1898 in Denmark ninety-six epidemics probably due to milk occurring from 1887 to 1896.

SOURCE OF INFECTION.

In the United States one person in every three hundred has typhoid. The average number of people living on a dairy farm is seven. This multiplied by the number of farms supplying a given city, divided by three hundred, will give the number of cases of typhoid to be expected unless precautions are taken.

Frequently cases are not recognized until the second or third week. In many light cases no physician is called. Frequently the stools and urine are thrown on the ground, in spite of the doctor's orders. Those handling the patient or his bedding or excreta may convey the infection on hands or clothing. Persons recovered from the disease but discharging the bacillus in their stools or urine may contaminate the milk in handling it. This may occur for years in some, *e. g.*, the typhoid carrier.

It is possible to convey the disease before being sick enough to take their bed. Conradi, who has studied the German cases, believes the infection is transmitted most often during the early stages, and even during the incubation period in eighty-nine of his contact cases. Fifty-eight per cent. of the secondary cases had their onset during the first week of the primary case.

Flies are a very potent factor in contamination, carrying the infection on their feet. More than ordinary pains must be taken to see that they do not gain access to the milk at any time. Excreta thrown into privy or on the ground may be carried by drainage, sewage and by the feet of people

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to the well, or become dried or carried as dust to the milk or utensils.

SEX INCIDENCE.

Women and children are larger consumers of milk than men. Hence if an epidemic breaks out among women and children, and school infection can be eliminated, the milk is to be suspected.

The time allotted to this topic forbids consideration of further evidence on this subject. Enough has been said to show that careful inspection of milk production, either by public officials trained for the work or by private individuals, with a knowledge of hygiene and bacteriology, is desirable.

DISCUSSION.

DR. GEORGE C. WILKINS, MANCHESTER.

This paper we have just listened to has given us many facts in the relation of milk to disease. From the moment milk is drawn from the cow until it reaches the table of the consumer there are many opportunities for infection of the milk; from the cow, from the milker, from utensils and the air. In all these ways the milk may be contaminated before it reaches the consumer.

The paper deals with the infection of milk by bacteria of disease, and the remedy or rather the prevention of this infection must come from a cleaner and more intelligent handling of the milk at the dairy.

Many people, unfortunately, are not cleanly from habit. Many milkers, undoubtedly, do not mind a certain amount of filth in the milk they drink themselves, and it would be difficult for them to bring themselves into the proper habits of cleanliness required for the production of a milk with a low bacterial content.

As an illustration of what a little cleanliness will do in

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the handling of milk I will quote the results of a series of experiments at one of the government experiment stations:

	Per cu.-cm.
Bacteria in milk from *unwiped* udders . .	7058
Bacteria in milk from *wiped* udders . . .	716
Decrease due to wiping	6342

We all know that the cows should be cleaned, that the dairyman's hands should be clean, that he should wear clean clothing, that the milk should be cooled quickly and placed in clean receptacles and kept cool until it is delivered to the consumer, but how to accomplish this result?

The most efficient methods that can be used to produce such conditions, it seems to me, are *two,* namely, an efficient system of dairy inspection under the State Board of Health, an inspection not only into the methods of handling, but into the health of the cows and employees. Secondly by the placing of added commercial value on clean milk; in other words, certifying milk that comes up to definite standards in regard to handling and the bacterial content.

The precautions necessary to produce clean milk raises the cost of production and this cost must be borne by the consumer; but the added cost is inconsiderable as compared with the added safety which is acquired.

It should be our duty as physicians in the various communities in which we live to discover the dealers, if there be any, whose milk comes the nearest to proper cleanliness, and to use our efforts to increase the number and to see that our patients, especially the little ones, have pure milk. It means the saving of life, and in cities where the milk supply has been regulated and controlled, the mortality rate of infants during the summer months has been markedly lowered.

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DR. THOMAS M. ROTCH.

I think the subject has been very well taken up and the recommendations very good ones indeed. Washington has been a terrible place. I was out there two months ago, and now you can get absolutely clean milk if you go to the right place, which is of course the laboratory. I made such a remonstrance that they fitted it up. The milk is from the Brandeis farm in Baltimore, and they are falling in line with the other laboratories. The milk was abominable in Washington before that time. I think something ought to be done to improve the production of milk.

DOCTOR BENNETT.

As a matter of practical importance I will say that I have found several farmers trying to sterilize their utensils by means of taking boiling water from the kitchen and pouring from pail to pail, with the idea that they were sterilizing every pail. We find that starting with boiling water at the house, 212, the first pail will be 167, the second 147, the third 127, and the lowest point at which water is effective against bacteria is 150° F.

Boiling water is effective, but it is not effective after it has been carried all over the farm or poured into several receptacles.

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Tubercular Hip Disease.

BY N. W. M'MURPHY, GILMANTON.

Hip joint disease has been defined as a chronic lesion of the coxofemoral articulation, beginning usually as an osteitis or synovitis, and terminating in recovery, ankylosis, or complete destruction of the joint.

The causes of hip disease are both predisposing and exciting. Among the most prominent of the predisposing causes are age, hygienic surroundings and a strumous diathesis; while the most frequent exciting causes are the exanthemata of childhood, traumatism and diseases of the neighboring organs.

Though it may occur late in life, hip disease is essentially a disease of childhood, and age is classed as one of the most important of the predisposing causes. It usually attacks children between the ages of two and fourteen, the generally accepted reasons for the relative frequency of hip disease at this early period being "the frequency of tuberculosis in childhood; the active growth and immature nature of the joint constituents; the greater liability of children to fall; and the greater activity of youth, which favors the development of disease from slight injury."

The pathological lesion in advanced stage is a destructive osteitis resulting in absorption or caries of a portion of the entire joint, and, as a tubercular lesion, does not differ from tubercular osteitis of other parts of the body. Its extent and destructiveness depend in a large measure upon the initial lesion and the virulence of the disease. In the head and neck of the femur the lesion may be limited to a cir-

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cumscribed area, the epiphysis completely destroyed or separated and the sequestra cut off by granulation, but in the severer forms the whole structure of the joint is destroyed and the acetabulum perforated by the ulcerating process. In a large proportion of cases, where the course of the disease is not checked by treatment, suppuration occurs, the abscess finding exit in the direction of least resistance.

Tubercular hip disease is seldom associated with pulmonary tuberculosis, though tubercular osteitis in other parts of the body, especially in the vertebræ, is quite common. It has been claimed by many authors that there is a direct antagonism between external and internal tuberculosis, and that this is the reason why patients suffering from hip disease, external cervical gland disease or angular curvature of the spine so seldom have pulmonary tuberculosis, but that when the tubercular process in hip disease infects the general system miliary tuberculosis, or tubercular meningitis, usually results.

SYMPTOMS.

While the symptoms of tubercular hip disease in an advanced stage are generally well defined, yet in the early stages they are more or less obscure and a differential diagnosis difficult, or even in many cases impossible, without the tuberculin test, as clinical signs alone are often deceptive and unreliable.

Hip disease is divided by most authors into three stages. In the first stage usually the first thing to attract the attention of the parents is a slight limp, noticed in the morning but usually passing away in a few hours. This limp is due chiefly to a stiffness about the joint and to pain, which is present to a greater or less degree at this time, and which is aggravated by motion and is usually referred to the knee, by reason of the distribution of the obturator nerve. The pain is periodical, often seizing a child suddenly while at

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play, more troublesome during the latter part of the day and usually disappears during the night.

Another early symptom, and one which is always present, is muscular rigidity, caused by spasmodic contraction of the muscles, and is apparently an attempt of nature to immobilize the joint and thus diminish the jar in walking. The limb at this stage is slightly flexed and, in some cases, abducted.

Atrophy of the muscles begins early in the disease, sometimes even before there is any pain, and continues throughout its entire course. The physical condition of the patient in the early stages is usually apparently good, in some cases the patient taking on a large accumulation of adipose tissue, thus giving an impression of health and vigor which in reality does not exist.

The second stage is marked by an exaggeration of all the early symptoms, with the addition of "night cries," suppuration and crepitation. Flexion and abduction of the limb, which were at first slight, now become marked, with the leg rotated outward. To overcome this position of the leg the pelvis is tilted, thus producing the apparent elongation of the thigh.

Abscess, which rarely occurs in the first stage, is a frequent and serious complication in the second stage of tubercular hip disease. The presence of pus indicates the destructive character of the disease, although extensive collections of pus may, in rare cases, undergo absorption without doing serious injury to the affected joint. Suppuration in hip joint disease varies but little from tubercular abscesses in other parts of the body, usually coming on gradually, with but slight constitutional symptoms, but as it progresses slight chills, followed by perspiration, will occur, with loss of appetite, pallor and general malaise. Locally the abscess follows the fascia and the pus finds exit at the point of the least resistance, sometimes at a considerable distance from the seat of the disease.

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The third stage is characterized by adduction, shortening, dislocation or ankylosis of the joint, followed by recovery or death from systemic or visceral disease.

If recovery occurs the symptoms, both local and constitutional, will gradually improve, the discharge gradually diminishes and the sinuses heal, the swelling and induration diminish, and the limb becomes more or less permanently fixed.

In fatal cases the anemia from excessive suppuration leads to death from exhaustion, the patient dying from amyloid degeneration of the internal viscera, tubercular meningitis or miliary tuberculosis, or from some intercurrent affection.

DIAGNOSIS.

The general and constant diagnostic signs of hip disease are limited motion, muscular atrophy, lameness, attitude of limb, pain and swelling, all of which should be carefully considered in making a diagnosis of any affection of the hip, as by so doing we can often avoid some of the mistakes so often made, especially in the early stages, in arriving at a correct conclusion as to the condition of the joint. But when all has been said the fact remains that a diagnosis which rests on clinical signs alone is often unreliable; and when any doubt remains, those of us who have not the necessary equipment for using the most modern diagnostic means should at once refer the patient to a specialist who has. To adopt the expectant plan of awaiting developments, thus depriving the patient of the benefits of proper treatment in the early stages, as has been so often done in the past, and, I am sorry to say, is done even at the present time in many cases, is, to my mind, unprofessional and indefensible.

The symptoms of "grating" so often mentioned in the text-books is of but little value as a diagnostic sign, as it is never present in the early stages, and when it does appear

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the disease is so far advanced that the true nature of the lesion has long been determined.

Limited motion is one of the first symptoms to appear and one which is persistent throughout the entire course of the disease. The amount of limitation is often difficult to estimate in young children, as, through fright, they are very apt to resist examination. For this reason the surgeon should always begin his examination on the well side, and by taking plenty of time secure the confidence of the child before attempting to examine the affected limb.

Atrophy of the muscles is the result of reflex muscular spasm; begins early in the disease, and is an important symptom in attempting to arrive at a correct clinical diagnosis in the early stages. The atrophy is greater in tubercular hip joint disease than in any of the acute affections of the hip, or in simple muscular disease, and is confined to certain groups of muscles. In the early stages the adductors are alone affected, the gluteal muscles atrophy, causing the characteristic obliteration of the gluteal fold. All of the muscles of the thigh and calf finally share in the general atrophy of the limb.

Lameness is another of the early objective signs, but as this is simulated in non-tubercular conditions of the hip it is of but little value as a diagnostic symptom until, in the later stages, the attitude and fixation of the limb induce a position and gait that are characteristic of the disease.

PROGNOSIS.

The natural tendency of tubercular hip disease is to recovery, with more or less deformity. When the disease occurs in a person past the age of puberty it is more serious and more fatal than when it develops at an earlier period. The prognosis is also affected by the hygienic surroundings of the patient, the disease being much more fatal among the poorer classes.

The co-existence of some other disease, namely Bright's

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disease, tubercular meningitis, caries in some other part of the body, etc., renders the prognosis grave. The course of the disease is favorably influenced by early and efficient treatment.

TREATMENT.

The first and most important requisite in the treatment of tubercular hip disease is to place the joint in a position of perfect rest. In the early stages, before any destructive process has taken place, complete rest offers the best chance of preserving the joint, while in the more advanced cases it affords nature a chance to preserve at least a part of the joint from invasion, and also by preventing friction offers the best opportunity for repair. Whatever retards the progress of the disease tends to relieve its symptoms and thus increase the power of resistance, both local and constitutional, upon which the ultimate cure of the disease depends.

A great many methods for securing rest to the joint have been devised, but I will mention only two or three of the most important of these. The traction splint, with its various modifications, is known as the American method and has probably been used more often than any other device. This splint consists of a pelvic band and an upright. The pelvic band is made of sheet steel, about one eighth of an inch in thickness and one and one eighth inches wide, sufficiently strong to support the weight of the body, bent to conform to the shape of the pelvis, and so arranged as to cause no anteroposterior pressure. This band embraces about three quarters of the pelvis at a point just above the trochanter. It is covered with leather and provided with a strap to be buckled around the pelvis. Four buckles are placed upon the pelvic band for the attachment of the perineal straps, the two on the front being placed directly above the attachments of the adductor muscles on either side of the genitals. Behind the buckles are

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placed much farther apart, to the outer side of the ischial tuberosity, upon which the weight of the body is to receive its principal support.

The pelvic band is bolted firmly to the upright at a slight inclination, corresponding to the inclination of the pelvis. The upright extends from the top of the trochanter to about two or three inches below the sole of the foot. It is turned inward at a right angle below the foot and is shod with leather or rubber. At about the middle of the upright is placed a support of light steel, which is provided with a broad leather strap for the purpose of fixing the thigh to the brace and supporting the knee. In the Taylor brace, which has served as a model for all similar appliances, the upright is a steel tube, into which slides a rod, supporting the foot part of the brace, the two parts being joined with a rack and pinion attachment and lock, so that the brace may be lengthened or shortened by means of a key.

Traction on the limb is made by plaster, preferably moleskin plaster, as that is far less irritating to the skin than rubber plaster. These plasters should be cut into strips corresponding to the lateral aspect of the thigh and leg, wide above and narrow below, reaching from the trochanter on the outer and from the pubes on the inner side, to the malleoli. The lower ends are reinforced by a second layer of plaster and to them buckles are attached. The plasters are then applied to the limb and are held in place by a bandage, which is smoothly applied and then sewed to hold it firmly in place. The object of the bandage is to secure the adhesion of the plaster and to keep it clean. The bands can be replaced by a tight-fitting stocking leg.

Another method of applying the plaster designed to obtain a better hold upon the limb is that devised by Taylor and described by him as follows: "The first important object is to seize the leg in such a manner as to exert against it an unyielding force. This should be done in such a man-

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ner as will not interfere with the circulation, nor injure the knee, by unequal strain, either below or above it. In other words, the whole leg should be grasped in such a manner that the knee will be supported. It may be done as follows: A strip of adhesive plaster long enough to reach from the waist to the foot, and from three to five inches wide at the upper and about one third that width at the lower end, is taken and cut into five tails. A piece from four to six inches long is cut from the center tail and added to the lower end to strengthen it; and, if the patient is muscular, one or two more pieces are laid on the same place, where a buckle is attached. Two similar straps are prepared, one for the inside and one for the outside, and laid against the lateral aspects of the leg, the ends with the buckles beginning about two inches above the internal and external malleoli, and the center tails reaching the entire length of the leg and thigh, to the perineum on the inside and the trochanter on the outside. The lower strips or tails are then wound spirally around the leg to the pelvis and afterwards the other two pairs of tails, which are cut down to just above the knee, are also wound around the thigh in the same manner. When completed the thigh is involved in a network of strips of adhesive plasters, which act equally and without pressure on the whole surface. The leg has about one fourth of the attachments and the thigh three fourths, which is found to be the right proportion to protect the knee equally from compression and strain. A few turns of the roller bandage are then made around the ankle, just under the lower ends of the straps, which serve as a protection to the flesh under the buckles, and then it is continued over the straps on the whole leg. Thus prepared the patient is ready for the splint."

The traction splint is applied in the following manner: The patient lying upon his back, the pelvic band is first adjusted and is strapped about the body. The perineal

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supports are then drawn firmly into place, so that pressure on the upright does not move the pelvic band from its proper position, just above the trochanter. The brace is then pushed upwards against the resistance of the perineal bands, while the limb is at the same time drawn downwards and is fixed by attaching the straps to the buckles at the ends of the adhesive plasters. If the brace is provided with a windlass or ratchet traction may be applied to the point of tolerance, but care must be taken that the brace does not project so far below the foot as to more than equal the extra length provided by the high shoe on the well side. The knee band is then adjusted, and if desirable a strap may be placed about the ankle to assure greater security. If in walking the patient is inclined to tilt the foot downward and bear the weight on the toe, a strap may be attached to the middle of the foot piece and fastened to a buckle on the heel of the shoe with sufficient tension to hold the foot in the horizontal position.

By means of this brace the weight is borne entirely upon the perineal bands, thus relieving the joint from all pressure and also from jar. The perineal bands should be accurately adjusted to pass upward in front, parallel to each other on either side of the genitals, to avoid pressure on the inner borders of the thigh, while behind they turn diagonally outward in order to pass over the tuberosities, which are best adapted for weight bearing.

Before the traction brace is used in ambulatory treatment, distortion of the limb, if it be present, should be corrected; or if the disease is particularly acute, preliminary rest in bed until the subsidence of the symptoms is advisable.

To reduce the deformity by the traction brace the patient should be placed in bed, upon a firm mattress. The distorted limb is then raised to slightly more than a sufficient angle to relax the contracted muscles and to straighten the lumbar lardosis. It is then abducted or adducted if neces-

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sary until the level of the pelvis is restored. The pelvic band is made to conform to this greater relative inclination of the pelvis by lengthening the posterior straps. The brace is then applied, the limb being held in the altitude of deformity by a sling or support, and as much traction as the patient can tolerate is exerted by lengthening the upright. The direct traction exerted by the brace may be reinforced by a cord running over a pulley at the foot of the bed in line with the brace, and a weight attached. Efficient traction will very quickly reduce recent deformity caused by muscular contraction, and as this is lessened the position of the limb is changed until it finally lies extended and parallel with its fellow.

If adduction is combined with flexion the perineal band on the well side is tightened from time to time, or a direct push against the opposite adductor region is exerted by means of a bar attached to the brace opposite the knee. In ordinary mild cases the deformity may be reduced by this means in from two to six weeks.

The brace should be worn day and night. The perineal bands may be loosened occasionally to allow of caring for the skin; but if the disease is acute, manual traction should be applied at such times until the brace has been readjusted. The adhesive plaster, if moleskin is used, may remain in place for several months without injury to the skin.

This form of brace is effective as a stilt and it is effective as a traction appliance, in the sense of relieving muscular spasm, in direct proportion to the care that is exercised in its adjustment. Traction by this means may be made effective, even to the point of fixation, as long as the patient is in bed or walking on crutches, but when it is used as a walking brace, as was designed by its inventor, constant traction is impossible, as the traction straps alternately relax and tighten as the weight of the body falls upon and leaves the brace in walking.

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When stepping on the well foot the joint is subjected to the traction, but is relieved from it when the weight of the body is thrown upon the brace, thus making traction irregular and intermittent. Of course the pelvic band assures a considerable restriction of motion, but cannot give the perfect rest to the joint which is desirable. As it requires from ten to twenty pounds to separate the head of the femur one eighth to one fourth of an inch from the acetabulum in children it is unreasonable to expect that the feeble and intermittent traction exerted by the ordinary traction hip splint, when used in walking, can be sufficient to separate the bones from one another and prevent friction when walking, as was originally claimed for it.

The theory that motion of a joint which is diseased is harmless has, at the present time, few supporters, even among those who still adhere to the use of the traction splint.

In acute cases rest in bed, with traction to the point of actual distraction, is recognized as the best treatment, and when the patient is allowed to get about the braced limb is made pendant by means of the high shoe on the well foot and crutches, so that uninterrupted traction may still be exerted.

Thomas of Liverpool, writing at a time when in America it was believed that motion was essential to the well-being of a diseased joint, said: "The main obstacle to the cure of an inflamed joint is the friction and pressure of its surfaces. Consequently the attainment of rest, that is of immobility of the articulation, ought to be the principle which should guide the treatment." Pressure and traction at night is employed for a time by means of a weight attached to the foot to prevent the tendency to distortion. As a temporary support to be used before the application of a suitable brace, the plaster bandage is often useful, but when the patient is allowed to get about this treatment, to my mind, is not to be compared with the traction splint.

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"The plaster bandage to secure support should fit perfectly, consequently it should be applied as closely as possible. A close-fitting covering of shirting is drawn on and covered with cotton flannel bandage, the parts more liable to be subjected to pressure being suitably protected. The plaster bandage should cover the lower half of the thorax and extend to the ends of the toes. It should be applied under traction, very carefully around the adductor region and the buttock, which should be entirely covered and supported at this point, in the line in which the jar of concussion is less to be feared than friction. . . . The more an inflamed joint is moved the stiffer does it become, while the more effectually it is fixed, the sooner and more completely is its capability of movement restored."

Another method of treatment is that by means of the plaster bandage without crutches or high shoe. This method is commonly known as the German method. By this means the bandage is applied from the line of the nipple to include the foot, the limb being fixed in the attitude of slight flexion, abduction, and outward rotation. Usually the first application of the bandage is made under anesthesia for the purpose of relaxing the muscular contraction and facilitating the application. The bandage is renewed at intervals of from two to four months. When the disease is cured and after the bandage is finally removed the Thomas hip splint, a piece of wood or thin iron strip long enough to reach from the middle of the trunk to the lower third of the thigh, should be incorporated in the plaster. The bandage may be applied in the upright posture by means of the swing, as used in the application of the plaster jacket, but is usually applied with the patient in the recumbent posture.

The short spica bandage is used as a routine treatment of hip disease in Lorenz's clinic in Vienna unless direct weight-bearing causes pain. It is applied in the same manner as in congenital dislocation of the hip, the aim being

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to fix the affected limb in an attitude of slight flexion and abduction, the primary attitude of hip disease. As an adjunct to mechanical support and during the stage of recovery, or even in the treatment of cases of mild type, the bandage is very satisfactory, but as a routine treatment it is not a sufficient protection.

In the treatment of the most acute cases by Lorenz, the weight of the body is removed by a prolongation or stirrup of steel, which projects below the foot, the two extremities being incorporated in either side of the plaster bandage in the neighborhood of the knee.

In the better class of cases a leather support provided with a steel foot-plate, extending slightly below the foot, and a joint at the knee is used. The short spica bandage in combination with the traction hip brace answers the same purpose and is more efficient, although more cumbersome.

The operative treatment has been purposely omitted from this paper.

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A Survey of Our Present Knowledge of Pancreatitis.*

JOHN M. GILE, M. D., HANOVER.

The anatomical location of the pancreas is such as to render it almost immune to traumatic injury and is perhaps significant of its great importance in the bodily economy and activity. On the other hand, as a member of the group of organs with double function, as represented by both an external and an internal secretion, it seems very prone to disease.

The internal secretion was doubtless its earlier work, as it was this secretion of the pancreas and other similar glands that had entire control of the functions of assimilation and metabolism before there was either a sympathetic or a central nervous system to take a hand in these processes. Now the organs of short or unstable heredity, in other words those in process of evolutionary change, whether in the way of increasing or decreasing function, are notably liable to disease. Observe the frequent inflammation of the appendix, the tendency of the little toe to corns and callosities, and the wisdom teeth to early decay. The variability of the sigmoid in shape, size and irregularity of curve is an illustration of the uncertainty of anatomy in an organ of advancing function and results in constipation and variable bowel activity.

The pancreas in its external or duct secretion would appear to be another illustration of an organ in the process of evolutionary advance in function that has not as yet achieved a fixed and constant anatomy nor one that best

* Read before the New Hampshire Surgical Club, March 18, 1909.

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protects it from danger of infection from associated organs.

The emissive duct of the pancreas divides before it enters the duodenum. The duct of Santorini, the more direct course, is in fetal life the larger of the branches, but after birth the duct of Wirsung becomes in the great majority of cases the channel of active excretion, while the duct of Santorini is little more than an unused line of mucous membrane.

In the Ampulla of Vater just before entering the intestine the duct of Wirsung unites with the common duct from the liver and gall-bladder, and this ampulla acts as a mixing chamber for these secretions before entering the duodenum. Here appears to lie the secret of the changing anatomy; just as the internal secretion of the pancreas is closely associated with those of the thyroid, suprarenals and Brummers glands, so the activity of its external secretion is intimately associated with that from the liver. For this purpose the main part of the secretion is turned from its direct course in the duct of Santorini and goes by the duct to Wirsung to meet the liver secretion at their common point of entrance to the intestine.

This brings us to a position from which we may begin to see some, at least, of the causes of pancreatitis. The biliary tract appears to be the most prone of all the mucous membranes of the body to produce concretions; and it seems to be a well established fact that the presence of such concretions, or gallstones, is prima facie evidence of the presence of a previous infection. We have then the secretion of an infected tract entering an uninfected tract and so every possibility of infection of the previously clean tract.

Certain mechanical conditions render this doubly likely to occur. A small passing stone is prone to lodge for a time at the outlet of the Ampulla of Vater. When the conditions of internal pressure are right this will cause a

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direct flow of infected bile into the pancreatic duct. Again, the common duct instead of passing behind the head of the pancreas, as indicated in the older anatomies, in over sixty per cent. of cases passes through the pancreas itself. A stone lodged in this portion of the common duct produces dilatation and may well result in infection of the surrounding pancreatic tissue. In these cases also, if the pancreas is primarily infected its pressure on the common duct may be a cause of biliary tract disease. Still again the pancreas may be directly invaded from the intestine, and this would appear to be likely to take place through the duct of Santorini, due to the failure of an outflow through it of pancreatic juice, thus allowing without interference an inset growth of bacteria from the intestine. This is probably specially likely to occur when there is any interference with the flow of bile, because in its absence the growth of intestinal bacteria is more than usually luxuriant. And finally we may have direct lymphatic invasion from an infected gall-bladder, either with or without stones.

The efferent lymphatics from the gall-bladder meet the efferent ducts from the pancreas in a ganglion closely associated with the head of that organ. Thus, as Haggard says, the pancreas lies at a lymphatic cross roads and every opportunity is offered for a peripheral invasion.

Infection of some part of the biliary tract is probably responsible for from fifty to eighty per cent. of all cases of pancreatitis, both acute and chronic. The intestine comes next in importance as a source of infection, but as we have seen, the cause here is often the obstruction of biliary outflow; and then a certain number of cases appear to result directly from infectious diseases, among which mumps hold first place in frequency.

We seem to have been exceedingly slow in recognizing the most important of these factors, *viz.*, biliary tract disease, as the cause of pancreatitis. In fact we have been slow in recognizing the presence of chronic pancreatitis

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even in the cases that we have operated on for bile tract disease. Ten years ago I made exploratory incision over the pancreas on account of a transverse tumor that I diagnosed as pancreatic cyst. Instead I found a much enlarged organ, with many areas of the characteristic fat necrosis scattered through it as well as numerous small pockets of purulent-looking fluid. Under drainage the patient was much relieved, but a year later, in another part of the state, he came under the care of Doctor Irish for a severe abdominal attack. He operated for gallstones and got a handful, and was very skeptical about the existence of any pancreatic trouble, while I began to wonder in a dim way if we both were right and both were wrong. But despite this experience, and though I have done a fairly large number of gallstone cases in the intervening years, it is only very recently that I have come to take routine notice of the pancreas in this operation. Once, a half a dozen years ago, the head of the gland was forced upon my attention by its greatly thickened and indurated condition. Gallstones were removed, the gall-bladder drained, diagnosis made of cancer of the pancreas and the patient's friends told that she would die forthwith. The patient, however, refused to verify the diagnosis, but instead proceeded to a prompt and permanent recovery. It was simply a case of chronic pancreatitis and drainage of the bile tract was all that was required for a cure.

The characteristic pathology of the disease is fat necrosis and this evidently means such injury to the architecture of the gland as to allow of leakage of its fat-splitting ferment. So long as the process remains interlobular only, grave constitutional symptoms other than those associated with indigestion do not appear, but if it becomes interacinous, glycosuria and the grave chain of events dependent on failure of internal secretion follow.

What of the symptoms? Are they sufficiently definite to lead us to a certain diagnosis? We must probably make

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some reservation in giving an affirmative answer at least in connection with the chronic cases.

Of the chemical tests that of Cammidge has certainly aroused the most discussion. Most of those who have worked with it, aside from Cammidge himself, claim at most but partial success. The general belief is, however, that it is worthy of continued trial. It is exceedingly long and tedious and requires the most careful laboratory technique. Mueller's nuclear test for the presence of tryspin is much simpler and appears to be valuable, but not positive. An excess of lecithin in the stools is claimed by Solomon to be almost diagnostic, not over 0.1 gm. appearing in the stools of a normal individual in twenty-four hours, while there will be from 0.4 to 1.2 gms. if pancreatitis is present. A reduction of ethereal sulphates in the urine apparently has claim to consideration. Probably the condition to which we have most commonly given weight is the presence of fat in the stools, but we must remember that bile as well as pancreatic fluid has the power of taking care of fat digestion to a good degree at least, hence the negative evidence would not rule out pancreatitis.

On physical examination a point of tenderness has been established by Mayo-Robson as characteristic of the disease. This point is located midway between the end of the ninth rib and the umbilicus, and another area of tenderness on deep pressure over the right rectus muscle, just above the level of the umbilicus. If duodenal ulcer can be ruled out this tenderness is considered by Ochsner to be diagnostic. Radiation of pain to the mid-scapular and left scapular region is also considered significant if gastric ulcer can be excluded. The general syndrome of indigestion that accompanies so many cases of gallstones should doubtless make us suspicious of an associated pancreatitis.

The acute form of the disease gives us one of our most dramatic pictures of a fulminant abdominal inflammation. The onset is with pain in the upper abdomen, usually

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at the right. It is comparable in severity with renal or gallstone colic. It is accompanied with severe shock, nausea, vomiting, great tenderness, tension of abdominal muscles, rapidly increasing tympanitis and in some cases glycosuria. Unless the last named symptom is present there is nothing that absolutely distinguishes it from other severe intra-abdominal inflammation. The location of the first pain and the presence of tumor may be of value. Fitz, in his paper on this subject, laid stress on previous occasional attacks of indigestion.

In this cursory survey of the subject I shall not go into detail in regard to treatment. In the acute cases it is unpromising at best. Whatever hope there is lies in prompt, free drainage, both of the upper abdomen and the body of the gland itself. Regardless of diagnosis, any such grave abdominal symptoms as have been described warrant immediate surgical interference. In chronic pancreatitis the cause that produces the greatest number of cases, *viz.*, an infected bile tract, is a definite indication of the line of treatment,—drainage of the biliary tract. Being sure that the common duct is free of stones, temporary drainage through the gall-bladder is ordinarily satisfactory and successful. We are learning that it is not wise to remove the gall-bladder unless its condition absolutely demands it, for occasionally permanent drainage is required and a cholecystenterostomy is the best method of securing it.

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Empyema.

E. E. LAKE, M. D., HAMPSTEAD.

Mr. President and Members of the New Hampshire Medical Society:

On my treatment of empyema I make this statement: It will get the patient out and able to work quicker than any other method, which is very important.

Look up any author you have. What do they say, if anything? They all agree on drainage. Some say remove part of two ribs. That leaves deformity and weak side for a long time. Drainage oftentimes extends over years. I know of persons who have had a tube in for years.

I will not go into the symptoms of empyema. You all know them—short, harassing cough, very scanty sputum, shortness of breath, usually night sweats, etc.

Where the ordinary is departed from to discover a procedure or remedy to meet and overcome conditions by strategy I realize a few cases is not a fair test. If I could come before you with several hundred cases, it would have great weight, but I will give you the best I have.

CASE I.—Man thirty-five; empyema following pleurisy on left side; sick two weeks; made incision one and one half inches between seventh and eighth ribs; removed about one and one half quarts of pus; put in two large drainage tubes side by side; next day washed out with boiled water, cavity holding about one and one half quarts of water; then I cut off about two inches of rubber catheter, put it through a nipple shield and wired both to my Potain aspirator. I wet the shield and when I commenced to exhaust

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the air from the side, it hugged down tight. In a minute or two the patient complained of a drawing in the neck I did not exhaust any more; waited about ten minutes, then removed the shield; washed out next day with boiled water, cavity holding about a quart; used pump as before. Patient complained of pulling in the neck quite a little; waited about ten minutes before removing pump. Next day made the large drainage tubes shorter, washed out the cavity, holding some over a pint, used the aspirator as before; same feeling in the neck. Went through the same procedure every day. In a week's time a cup of water would fill the cavity; cut off large tubes so they would just go between the ribs. They came out in a few days themselves for good. In two weeks he was doing light work; working now hauling lumber. Noticed that he complained of his neck every time. He was the only one that mentioned it. Why the others did not have the same feeling, I can't say.

Case II.—Empyema following pneumonia on right side; one and one half inch incision between seventh and eighth ribs. All of two quarts of pus came away; put in two large tubes; next day washed out cavity, holding about two quarts of water. When exhausting the air I expected him to complain of his neck. As he did not, I thought something was not working right. In looking to see where the trouble was, I noticed that the intercostal spaces were sagged in. I waited a few minutes and they gradually came out. I exhausted a little more and they sagged in again. The next day the cavity held a pint less of water. I watched the intercostal spaces and when they sagged in I stopped for that time. In two weeks' time this man coughed out the large tubes for good, and lung was well down. No further trouble.

Case III.—Girl nine. Empyema following pneumonia; about a quart of pus removed; treatment and result the same as second case. The sagging in of the intercostal

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spaces was my guide in determining how much air to exhaust.

CASE IV.—Girl six. Empyema following pleurisy; treatment and result the same as case three.

How long standing a case could be and respond to this treatment is a question, but any case three or four weeks old would give good results, and that is giving any of us plenty of time to make a diagnosis.

I haven't anything to say about the frequency of empyema, effusions or serofibrinous conditions. But in all cases of pneumonia or pleurisy where there is delayed resolution, keep watch for some abnormal condition, for nature has met with an obstacle.

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The Development of Milk Laboratories in Regard to what Food Stuffs They Can Provide, and Their Relation to the Principles of Infant Feeding.

PROF. THOMAS MORGAN ROTCH, HARVARD UNIVERSITY.

Mr. President, Ladies and Gentlemen:

I am very sorry I have no paper to present. I was supposed to give a lantern lecture this afternoon and what I have to say came in with the lantern, and the various pictures as they came up were divided up and served as headings for what I had to say. Unfortunately you cannot have a lantern, and therefore, if you will pardon me, I will speak informally to you on the subject of foods in general, connected perhaps with early life, but also the position they ought to take and what ought to be known about foods before attempting to feed infants.

You know that all over the world the feeding of infants is almost an opprobrium. Each part of the world may have perhaps a certain use which it holds in regard to feeding in early life, especially during the first year, but we have had very little, until the last four or five years, of real progress in this subject. It has been left a great deal in the hands of those who have practised impractically, and it seems the time has come when those who wish to enter into the field of feeding infants should make a more careful study of dietetics. The subject has not been taught in

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our various universities. Physicians who lecture on infants and children bring in the feeding of course as a very large part in the general curriculum.

Now we have not in the past paid sufficient attention to medical chemistry and to physiology, as in its bearings on this subject, and until we become more proficient in these we certainly shall not succeed in feeding properly young human beings.

The feeding by breast milk, which is accorded to be the best all over the world, I shall not speak about for lack of time. It is allowed that we never have accomplished in what is called "artificial feeding" what has been done by nature's process of feeding from the human breast, but there is no question that in a great number of cases human breast milk, as obtained from certain individuals, is not good for certain babies, and no question but that a certain number of women in the world cannot nurse their babies and cannot get human milk obtained from wet nurses for them. There is also no question whatever, especially in America, and especially in our northern states and in the large cities, that there is a large class of women who deliberately do not intend to nurse their babies. They have a certain excuse for that, in that with all the surroundings of city life the race is becoming unfit for nursing the infant. With this excuse behind them, which is a very lame one, they do not nurse their infants. We as physicians have always held that we have not much to do with this phase of the question. We tell people that if they bear children they should attend to their own physical health during the first year that the child is born and should nurse the child, because in the large majority of cases we know all over the world that is the best method. We tell them that just as we would tell them what is the best operation to be performed, who is the best man to do it, and who has been specially trained to do it with the greatest chance of success. Having done that we have nothing to do, espe-

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cially with any moral side of it. It is not immoral for a woman not to nurse her baby. We are trying to have emanate from the medical profession what is best, and when the best cannot be obtained then we will tell them what is next best to do. Now it is not our fault if the next best is not rapidly approaching the best, because we have made great progress in making up a system of what might be called "substitute feeding." We have it all over the world; it does not come entirely from the scientist, but also from the laboratories, and so long as we ignore all the truths which are continually being brought before us in the province of dietetics, so long will we practically make failures in feeding. The baby is fed on routine mixtures as a rule, with less scientific knowledge, less real practical knowledge, and almost with ignorance, to a greater extent, than occurs in any other branch of our profession.

It seems to me it is a perfectly proper and perfectly practical view to take that here we have thousands of young human beings coming into the world, and our object is to preserve their lives, and thousands are dying, not because at the start they were not able to live, but because they are being ill fed. So why should we not make progress in this direction as we have in other branches of our profession, and pay just as much attention to it? But it is a fact that the profession at large do not, and a fact that there has been a great deal of scoffing as to the advances which are being made in the subject of infant dietetics. Only the other night, at an assembly of physicians in Boston, where usually they ought to have known better, men who have had opportunities to know the very latest in this branch were very skeptical. They said that after all what was the use in making so much of a subject of this kind? Now that is not a very noble sentiment, and it seems to me the profession ought to rise against such statements. I am merely going to try and show you what has been done and what could be done if we all took up

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the subject of infant dietetics just as it has been taken up for adults. The adult is very carefully studied by his physician and the adult in a case of dietetics, where all the good that can be done is through the feeding, has a large amount of thought and brains expended on him. He is not handed over to an ignorant woman the same as an infant is, who has fed, she says, hundreds of babies, but with the light only of ignorance to guide her.

Now in the first place the great secret in feeding infants well is to not believe that we know a great deal about it. We must be iconoclastic if we are to advance. We must tear down the old traditions of the past. This is difficult to do, but I believe if we go to work together and simply accept that which is proven and throw aside old traditions we can make great advances in this branch. Great advances have been made. Nothing must be too simple. You hear different opinions given. In Germany they are feeding with calories. They claim that the Americans do not pay enough attention to caloric feeding, but pay all to the percentage feeding. The fact is there is no rule for feeding babies. Each individual, during the first year of life, differs from another, and you cannot feed babies according to their ages any more than when they get older you can, at a certain age, make them do a certain amount of labor or put them in certain grades in school. Each individual is an individual and it is the individual feeding which will make the greatest success. Each individual must be a study in itself. If you accept that and do not attempt to feed because a baby is so many months old, you will find that you will have very much greater success. Many babies at three or four months of age can be fed the same as others at six or seven, and the reverse. Sometimes you will hear it said, even by distinguished members of the profession, that all the trouble is in the fat, another all in the proteids. In New York they are running the fat fad. This fad has extended to

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Boston also. In Chicago it is the proteids. I have endeavored to go to other cities and mingle with other men, and not rely entirely upon what we were doing in our small local place of Boston, and I know what is thought in different parts of this country as well as Europe, because it has been very interesting to me to go and get different opinions from different men.

Now suppose we start using all the knowledge we have—that is, in building up a system with the knowledge we have and the possibility of acquiring further knowledge and bring it to bear on each individual baby whom we are called upon to feed. I think if we make a start in that way it will clear the ground. There is no question that there are a great many absolute truths known by professors of dietetics and physiologists, which we, as general practitioners, do not know. There is no question that a very large amount of important knowledge has come from the farmers. They have taught us over and over again for the last fifteen years certain facts by using which we can save the lives of thousands of infants, not only in the matter of feeding when they are well, but also when they are attacked with the various disorders during the hot months. Now the only way is to learn from all who can give their knowledge to us. The profession at large is very far behind what it ought to be and it is almost disgraceful that the position which we have taken, when we ought to be safeguarding early life, merely means throwing away the very weapons which should be used to guard it. Most useful knowledge is given to us by those who have not a university education at all. The fact is there is no royal road to feeding a young human being during the first year of life. It consists of a long chain, and if one link of this chain is broken it breaks the continuity and the success of the feeding is lost. I am saying this because I am sure it is the only solution of this very difficult problem.

Putting aside the question of human milk, when we use

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the milk of animals we know from long experience that practically wherever we go we must use cows' milk, although you can get goats' milk in Italy and asses' milk in Paris; but no milk of any animal is exactly like human milk. However, there is no animal milk but that we can take and make it correspond to what is needed by human beings. We shall, however, merely discuss cows' milk. First, where shall the cow be kept? If you could see some of the disgraceful farms all over New England where milk is produced it would be very easy to see at once why you are not successful in your feeding of babies. There is no question but that it is not the physician's fault that he has to deal with food which would not be allowed in any decent market for adults. Simply taking the number of bacteria in milk does not help us a great deal. It is far better to have ten or twenty thousand bacteria of a harmless variety than ten or twenty which are pathogenic. Therefore it is not all in the number of bacteria which you find in milk; but we wish to reduce the bacteria, we wish to have as pure milk as possible, and to bring it as rapidly as possible to a similarity with human milk. The toxines in impure milk are not affected by heat and can produce very serious diseases, and diseases which we know very little about—not enough to combat them. We therefore should look into our milk supply and I had hoped to show you what can be done on the farms. Of course it is more expensive, but we might as well accept at once the fact that cheap milk for the baby is a very dangerous factor for killing the poor people's children. Cheap milk is a very expensive product with which to deal.

There are a certain number of model farms I have been interested in for a good many years—eighteen in this country, one in London. I mean in connection with the laboratories in the large cities. On these farms absolute care is taken of the milk, just as it would be in your surgical operating room in the hospital. You have your cow stable in

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the first place with nothing in it but the cows. There is no grain and no hay, for the very practical reason that there are certain organisms which are found on hay which are gas producing, and when in a cow barn unavoidably get into the milk. The cow should be separated then just as much as possible from all hay and grain. The whole building should be very much like a good hospital ward, no drainage whatever connected with it; asphalt down the middle, and open at either end, so that it can be flushed out with the hose; the cows headed toward it, the grain put in, and the remains washed out. Now the point is to keep the cow as clean as possible. That does not mean scrubbing and washing with soap and water continuously. I have made a study of just these points on these farms and I think I know what I am talking about. Do not make an over-nice toilet of a cow, who is very sensitive and will not give as good milk if you do, but keep them as reasonably clean as you possibly can. The pail should be protected with a top over it, and in that way avoid bacteria. There should be absolute cleanliness so far as the cow is concerned, and that means that the milkers must be clean. On these farms they are usually intelligent men, and are paid higher wages than the usual farm hand. It is insisted upon that they should be clean. We provide them with clean towels and soap and water, and milking suits are never used twice. They are always sterilized after being used. These men are also carefully examined by a physician twice a month. Numbers of epidemics arise from the hands of the milkers. It is an important matter to look after, just as much as that a veterinary surgeon shall examine the cows. Perhaps twenty-five per cent. of the cattle in New England are tubercular. Babies are exceedingly sensitive; they are very vulnerable, and all these little points will aid you in your feeding if you see to it that the milk comes from clean hands and clean milkers, stables as free from bacteria as possible, and from healthy milkers and healthy cows. You should

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see that there is as little dust as possible around the cow houses. If you have a case where the baby is not doing well and is continually having relapses, you will find it well worth while to go into these details. A great deal of dust is stirred up if the cows are fed before the milking, and they should therefore be fed afterwards. Have the milk perfectly clean when used if possible. Even if the milk is clean when it starts from the producer, you must protect it from the middlemen. I would ask you to use all your influence to see that the milk is brought directly to the consumer.

Also I would not like to have you think because we fail in obtaining the best that the second best should not be striven for. If milk can be obtained from milk laboratories half the battle is fought in feeding young babies. I think, from what we know at the present time, that any young infant born well and healthy, whose stomach has not been tampered with either by poor breast milk or some unreasonable food, will show a normal line of nutrition during the first year. It is well known that we should use milk of the best quality and should modify it according to the needs of the special baby. The following case illustrates what can be done with milk which is treated with care and sent from the laboratory: A baby was fed in Boston and then went to New York to take the steamer for a European passage. The New York laboratory received word from the Boston laboratory as to what modification the baby was taking, and the baby went on with the same food. Two hundred feedings were put up for it and simply heated to 155° degrees twice. These two hundred feedings went with the baby on the steamer, went through the Straits of Gibraltar to Genoa, and to their home in southern France. For some days after their arrival the baby still took this same milk until they could straighten out the home milk, as it was perfectly good. That was at least three months ago. Last Sunday I went into the New York

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laboratory where that milk was put up and they have got jars there of the same milk still perfectly sweet. It had not been boiled, but simply heated to 155°, which does not coagulate the albumin, but does kill living organisms.

Now a few words in regard to the baby. I would like to say that you will have to study each individual baby and fit the food to that baby, since all babies do not take the same food. Some babies are born who do not digest fat well. If you have studied the baby and found it cannot take much fat, that has to be avoided, or a low percentage of fat must be given until the digestion of the baby has become fitted to take fat. In like manner we should study and treat the other food stuffs. Remembering these points we can then go on and make a combination of the food in the combination of percentages which will be fitted for the special baby. There is no question but that the way to get at the food for certain babies is by changing the different percentages until we find which digestion, whether fat or sugar or proteid, is weak and needs to be attended to, and then make the proper combination.

Now having said so much we come to the laboratories. The milk laboratories should not be considered commercially, not as simply sellers of milk. They should be considered as research laboratories. A very large number of the most important advances in dietetics which have come to us in the last ten years have come out of these laboratories. As research laboratories they are placed at the disposal of the teachers in the universities. They should be looked upon as instructive and for the benefit of human beings, not only for the first year, but for adults also, and in them can be obtained any combination of foods connected with milk. Remember there are only certain food stuffs in the world. A combination of these make up certain foods. The proteids, the fats and the carbohydrates are the food stuffs which exist in the world, and it is a combination of these which make up the foods for all life. It is

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merely a question of management of these food stuffs. The patent foods contain nothing we do not know of. The easiest way to make a food which can be preserved is to use starch. Therefore in these patent foods which have been flourishing all over the world there is nothing unusual. Now the object of the milk laboratory is, by skilled chemists, to find out all the constituents of each patent food. If it is Mellin's Food we know it contains maltose. Some babies need maltose instead of milk sugar. Physiological chemistry has shown us why this is. If you are having trouble with lactic acid fermentation and know that milk sugar (lactose) is nearer to this form of fermentation than is maltose, you should prescribe maltose. We should not always order milk sugar but the special sugar needed by the special baby. This is simply an instance of one of the special advances which have been made by means of laboratory feeding. In the same way, if it is necessary to get as large an amount into an individual as possible, we know now how much of the various sugars, whether sucrose, lactose, maltose or dextrose, can be taken by an individual before it is shown he has as much as he can take by its appearance in the urine. You cannot give as much lactose as you can dextrose. Therefore if the young individual shows an idiosyncracy in the way of not digesting lactose you should try maltose, which will sometimes give good results when lactose will not.

The next point is to consider what we can do with the food stuffs. You must understand what kind of fat you give to babies. Some babies will take a certain quality of fat and others will not, and so long as you feed babies on too great a proportion of the volatile glycerides, they will not do well. Simply change the quality of the fat to that which contains a greater proportion of the stable glycerides. Cows which produce the best milk for early life are a mixed grade, or, still better, Holsteins. The Holstein milk is exceedingly valuable for infant feeding. This milk is very much more stable than that of any other breed.

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Now we come to starch. If you are going to use starch with young babies, use it intelligently. There is no doubt but that the question of starch in feeding is most ignominiously dealt with by the medical profession. Men perfectly sound in other branches of medicine will say, "We always use starch and barley water," and another set will say, "We never give any." We should not allow ourselves to be forced on to one side or the other. What do we know about starch? In the first place when the baby has a diarrhea you find that pretty generally all over the world we cut off milk and give barley water. Not one man in a thousand can tell you why, only it has been given for years. It is simply a little peculiarity of the human race. Now what is starch given for? There are only two things possible to give it for. One is to break up what we call the curd, the other is to use the starch for nutrition. In using barley water you as a rule don't know how much starch you are giving. If you decide to give starch for nutrition it should be only after the amyolytic function has been developed in the baby. Its function of converting starch into sugar has not been developed in the early months of life. If you tax a growing function at a time when it is being developed, you weaken that function if you do not use it intelligently. If, on the other hand, they say, "I believe in taxing that function," always, when a man talks in that way, push him, and push him until he tells you why he gives it. He won't be able to unless he gets down to these facts. If they say to break up the curd, say, "Why should we break it up?" With what we know about the proteids there is no necessity for putting into the food a foreign element starch. If you must use it, you should know the percentage to put in, which is .75 per cent., in order to break up the curd, if you wish to use that mechanical method. Fifty hundredths per cent. will not break up the curd. On the other hand, for purposes of nutrition you must give a high percentage (1 per cent.) of starch. If

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the child has a weakened proteid digestion give it very little casein. In laboratory mixtures we can give as low as .10 per cent. or .15 per cent. If you begin with .15 per cent. of casein you can also add a high percentage of the whey proteids, .70 per cent. or .80 per cent. If this agrees you can then gradually increase your casein and accustom the baby to digest casein. If you combine the proteid constituents in this way, and know how to use them, you will find that you really will have made a tremendous stride forward in infant feeding. There is no question that there are hundreds of important cases doing well, which did not formerly, by simply using what has been evolved in the last ten years. Now when you get so you can make your combinations of fat and sugar, starting with a divided proteid and gradually getting up to a whole one, you have educated the baby's stomach and improved a difficult digestion.

Now what else can we get out of the laboratories? It should be a place where any organism can be obtained which can be used for good in the milk, just as you can take all the good that is in Mellin's Food or any other patent food and leave out what is unnecessary. So these organisms can be used and will help in the treatment of disease. You can perfectly well have a certain center in all the country districts where you can have much done and very much the same as in the milk laboratories. It would pay the people in all the New England states to have such a place and to have the milk and its modifications sent out from these centers, and to have particularly fine farms connected with the consumer, so that the product can be brought into close connection without any break in a link of the chain.

Just as you have to feed a baby when well according to the baby and fit your food to the special baby, so it is if it has diarrhea. You should not treat all your cases of diarrhea in the same way. I am trying to differentiate the facts which may be of some use to you as practitioners.

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We know they are different. In summer we know that hot weather increases the tendency to fermentation and thus causes diarrhea. The organisms producing the diarrheas, however, are the same in cold as in hot weather. There are infectious diarrheas, as in typhoid fever, and non-infectious, as in the fermental class, caused by saprophytes. We have not made a great deal of progress in taking care of the infectious diarrheas, but we have in the fermental class. In the children's hospital, where I have treated these very violent forms just as well as the millionaire's child is fed, we have the milk prepared at the laboratory, completely under my control, just as you would in a fully equipped laboratory of any kind, and the young men are thoroughly competent and know how to study any special baby and study the combinations of the food stuffs adapted for the baby.

Now what have we accomplished? There is no question but that there have been more advances in America on the subject of infant feeding than in any other country. In England, where they are usually so very slow to take up new ideas, they have taken up the American methods much more than in Germany and France. We have the best farms in the world, the best research laboratories for milk in the world, and have got men, young Americans, who come to the front and are not going to be kept down by tradition. We are using a Bulgarian bacillus, brought over in a test tube, and being used in Boston this summer in treating the non-infectious diarrheas.

We began using buttermilk. Professor Wedeen came over from Stockholm and said, "We are treating our diarrheas with buttermilk." One summer they do well, perhaps the next two they do not. One of my assistants, knowing about what was happening, gave buttermilk in a certain number of cases. It didn't do any good. We went to another farm and got some more and used that, and the cases did well. We immediately took this buttermilk and

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differentiated the special strain which was doing the work. Out of perhaps two or three hundred different strains some of them will work and some will not. Whether they drive the saprophytes out of the intestines or keep them from growing amounts to the same thing.

Now we have got this work established. We order the bacillus on prescription just as you would order maltose or lactose or casein or fat. We study the baby first of all and find what combination it needs. If it is taken with one of these forms of diarrhea where there is so much fermentation we must use this lactic acid organism. You can order .25 per cent. lactic acid, then stop its action there and simply give it as a lactic acid mixture to the patient. At the laboratories they put it in the foods when ordered. This is the latest method of treating these diarrheas. First of all make your diagnosis. In general practice you know you are giving what you think the child ought to take, but the baby does not get what you think you are giving it. Unless you know whether you have sixteen per cent. or twenty per cent. fats in your creams you will be entirely misled as to the percentages which the baby is getting. Therefore you do not have a fair opportunity for treating the baby. From the laboratories I know that I am getting a milk with an exceedingly low bacterial count. I also know that I am getting the percentages and combinations I am ordering. It is so easy to say, we will have five per cent. lime-water or twenty per cent. of something else. How many men know why we put the lime-water in? They say it is an alkali. But the great point in using lime-water is for its own peculiar action. If it is the proteid which is giving trouble, or if it is desirable to inhibit digestion in the stomach, you must vary the amount of alkali in your mixture which corresponds to the amount of milk and cream in the mixture in order to bring about the result desired. The amount of casein in the milk and cream varies in the different formulæ.

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It does not make any difference whether it is a strong mixture or a weak one, you have got the amount of milk and cream which provide the casein, and the alkali should be adapted to that amount. You can if you wish entirely stop the action of the rennet upon the casein by adding lime-water to fifty per cent. of the milk and cream used.

Now all I wished to impress upon you was that you could all help from the very beginning by insisting upon getting pure, clean milk, by guarding it from the time it leaves the producer until it gets to the consumer, and by knowing why you make these various mixtures. The point is to study the individual baby and find out which of the food stuffs are required and can be digested, and then you will be in a position to prescribe and treat the case intelligently.

DISCUSSION.

C. D. HOWARD, CONCORD.

It seems to me that this whole matter of artificial feeding, *i. e.*, percentage feeding on an exact basis, is still very much in its infancy. Outside of the large cities—where, of course, the milk laboratory is now well established—the great majority of physicians and mothers still have to rely for artificial feeding either upon the patent foods or else upon the relatively crude and uncertain process of home modification.

Considering the comparatively simple character of most of the patent foods, and the impossibility of their intelligent adaptation by the physician to the needs of the individual case, it seems to me that these foods are to be regarded not only as expensive, but, on the whole, rather unsatisfactory substitutes. And, as has been so clearly pointed out, the difficulties attending home modification, resulting from such factors as the frequent insufficient intelligence or want of proper care on the part of the person who

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prepares the food, the impossibility of having control analyses, the differences in the character of the milk of the different breeds of cattle, to say nothing of the often rather marked fluctuations in the quality of the same milk supply from season to season and from day to day even, and also the filthy character of such frequently delivered, all these factors mean that home modification, as usually practised, is likely to result in a product which may be not even an approximation to what the physician desires to have fed.

But until the milk laboratory comes to be a more generally established institution the average physician will be compelled to continue figuring the thing out as best he can. He will, for instance, if he gives the matter his close personal attention, want to know something about the character of the milk used as a base; information as to the proteid content is always desirable to have. Hitherto any very reliable data of this kind has been attainable only as the result of a somewhat elaborate and expensive chemical analysis. Recently it has been found possible to quite accurately deduce the content of proteids of the milk, not only of a herd but even of the individual healthy cow, knowing the percentage of total solids. To do this it is merely necessary to divide the solids by the factor 1.34 and subtract this result from the per cent. of solids, the difference representing the per cent. of proteids, from which it is evident that, given the solids and the fat, the complete proximate composition of cow's milk may be readily calculated.

Another feature to which I would like to refer is the alkalinity. Doubtless there is much to be said in favor of lime water—the alkali commonly used—although some of the claims in its support are apt to seem rather illogical to the chemist. It is claimed that magnesia may be used with good results, although such use is hardly rational in view of the practical absence of this element from breast milk. While it is still a matter of some uncertainty, yet

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the present evidence is that potassium salts predominate in the ash of human milk, and this is doubtless the basis for the use in at least one of the manufactured foods of bicarbonate of potash as the neutralizing agent.

In connection with these considerations it is well to remember that the amount of base actually introduced for a "five per cent. alkalinity," whether it be of lime-water or of any other alkali, is really exceedingly small. In fact, if we consider the amount of lime present in an average hard well water, it will be evident that the use of such in making up the milk mixture might easily introduce a considerably greater proportion of lime than that due to the lime-water itself. But what would seem like a rather important argument that might be brought against the use of lime-water in connection with home modification is its somewhat uncertain character as dispensed at the average drug-store. The physician prescribes, we will assume, an alkalinity of five per cent. lime water. The chances are, however, that in very many cases it will actually be nearer two and one half per cent. than five per cent., and possibly much less than this even. At the best, lime-water is very prone to deterioration, and we find that quite a few druggists are apt to be somewhat careless as to the preparation and care of such a cheap article. While collecting samples for analysis not long ago a druggist remarked to one of us that he thought we were in pretty small business. "Why," said he, "we don't pretend to make anything on that stuff. I'll give you a barrel of it if you want." This remark might suggest that that druggist at least was not wasting any distilled water on his liquor calcis. On the other hand, bicarbonate of soda is not only something that is to be found in every kitchen, but the leading brands, as on sale at every grocery, are of a very satisfactory degree of purity. A further convenience is to be found in the fact that a level teaspoonful of this salt dissolved in a quart of water will give a solution the alkalinity of which is practically equivalent to that of lime-water.

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One more item that I would like to draw attention to is the milk-sugar. At least one book on infant nursing intimates that this product is liable to adulteration, while another writer suggests that it may be necessary to pay as much as sixty cents a pound in order to insure getting the best article. I have recently had occasion to examine something like a dozen samples, representing practically all the better known brands on the market. The price paid was from twenty-five to forty cents a pound. In no case was gross adulteration detected, such as with cane-sugar, starch, glucose, or excess of albuminoids. In fact there was but one sample that failed to comply with the requirements of the pharmacopeia, in this case there being an excessive amount of mineral matter. Some of these brands were much better than others, however; that is, they were cleaner, freer from lint, dust and odors and small residues af albuminoids and mineral matter. A point of some interest in connection with these examinations is in the fact that the better known brands, those usually selling at a somewhat higher price, were found to be no better in any respect than the majority. In fact the brand that sells at the highest price, especially recommended by the packers as being an article of exceptional excellence, was found to be one of the poorest in the lot.

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The Fashionable Shoe as Worn by the Human Foot Seen Through an X-Ray.

A. F. WHEAT, M. D., MANCHESTER.

This paper is not intended to be of exhaustive research, nor shall I go into the anatomical details, nor symptomatology. I merely wish to present a quick and ready means of bringing to your notice a growing evil.

The well-known desire of Bobby Burns, that we might have the power to see ourselves as others see us, has a near approach in the various applications of the X-ray; and I feel assured that could the Fair Feminine see how her toes are cramped and deformed by the styles of shoe worn for some fifteen years she would at least hesitate about wearing them. I presume, however, that the decree of Dame Fashion, which in this instance originates among the actresses of New York, would be followed out by most of womankind, even if her toes *were* pinched. I have found far less trouble among the men, in the wearing of proper shoes, than is encountered in the Fair Sex.

The vast importance of the question of proper shoes is not rightly appreciated by our profession, and it is my purpose to call your attention to some of the results as we daily, almost hourly, see them, as viewed through the X-ray. And to impress upon you its importance I will make this statement, that not a single person above the age of twenty has a normal foot.

In the series of pictures I have, about every style of

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shoe is illustrated, and the ages represented are from fourteen years upwards.

The pictures speak for themselves, yet in this series there were but few complaints about the feet, which goes to show how much nature may be maltreated and still not complain.

The foot in its normal bearing is really a three-point suspension or bearing, with two arches. Beginning from behind, the first point is the heel, which forms a broad angle of a triangle. The outside point is the distal ends of the fourth and fifth tarsal bones with the corresponding metatarsals. The inside point is the distal end of the first tarsal, together with the great toe. Between each of these points there is an arch. Now displace any one of these points of suspension or of bearing and at once the corresponding arch is weakened. These points are held in place by supporting structures, and displacement of any point stretches and weakens the supports, which nobly resist as long as possible, and then permit, after the limit of tolerance is reached, a displacement of the bearing point and a consequent sagging of the arch. All this is mechanical, of course. Now what effect has the modern shoe on this three-point structure. First the third point mentioned, that of the great toe, has rather a longer leverage than the others and as a result less force is needed for its displacement. Hence any crowding or pushing to one side of this point is attended with more severe results. Normally there should be a space between the great and second toes, which is well recognized in some heathen countries, where there is a separate toe in the stocking for the great toe, together with a footwear that permits the spreading of this toe to its proper place. In the modern shoe, where the inside edge is inclined inward to a more or less sharp point, dependent on the style of the shoe, the great toe is pushed, or more often crowded, towards the center line of the foot, which of course weakens the point of support. But there

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are some shoes with a straight inside edge, and yet not correct, for the outside edge is of importance in relation to the outside point of support. If this point is pushed or crowded towards the center line there is a weakening of this point. Furthermore, a too short shoe, even if broad enough, throws either or both of these points out of place, for the toes have to curl up, and in order to curl up they tend to point towards the center line. Try this with your own toes, and you will see the effect of the flexion. The pictures which I will now pass around will illustrate all the above nicely. It was impossible for me to obtain a normal foot for illustration, but you are all familiar with what the normal form should be and can easily appreciate the deviations.

Coming to the third point of suspension or bearing, the heel, we find less trouble here, though there is enough to warrant a careful study of the effects of the modern shoe on it. Displacements of the heel are generally in regard to height and are either an effect from anterior displacements, or else transfer their evil tendencies to the long-suffering anterior part of the foot. The effect of the heel of the shoe, its situation, shape, width and length, together with its height, are all of importance. Normally it should be flat, low, broad and extend from well under the long arch of the foot to a little beyond, to the posterior end, of the os calcis. The farther forward the shoe heel is the more strain on the tendo achillis and on the two anterior points. The narrower the shoe heel, the more strain on the lateral ligaments of the ankle joint and on the two arches of the foot. The higher the heel, the more strain on the anterior arch, both from above and below. The height of the vamp is of importance, too, in this same way, and especially so when the shoe heel is high. Any deviation of the third point of suspension or bearing affects the knee, the pelvis and the spine, with consequent troubles in those bones. This same effect is occasionally noted with deviations of the

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two anterior points, though to a less marked degree. The breadth of the heel should be well to the outside of the edges of the os calcis. Many a slip and fall has been due to a poorly shaped shoe heel, as any one who wears the right shape can testify, after having worn the wrong kind. I might add here that a soft cap or no cap at all is a prime necessity.

Comes now the question, what can we do? There are two classes to be considered here, those who have feet already deformed, those whose feet are now normal. The answer in both cases is, wear properly shaped and properly fitted shoes. As to fitting, the shoe should allow expansion of the toes as to length and breadth; a low, wide and long heel, set well back; a straight outside edge to the end of the little toe, and then a gentle curve around the front of the toes; a straight inside edge inclining inwards. In a few words, the shoe should fit the foot, and *not* the foot fit the shoe. Furthermore, this treatment should be begun in babyhood and continued through life. And this is where we general practitioners come in, for a few words of caution at the right time will do much to do away with present troubles. There is but little difficulty among the young folks, for there are excellent and proper shapes for them up to about the high school age. It is at this time that vanity enters in and the modern-shaped shoe is begun to be worn. And it is at just this time that we should caution the parents about *shoes,* as well as about other topics. To go back a little, no child should put on a shoe until walking has been established for some months. The idea that the shoes support the ankles is as fallacious as that corsets support the spine. On the contrary, the shoes *weaken* the ankle. Nature has given the child muscles and ligaments, and these grow strong by *use* and not by support. When a child begins to try walking there is no objection to a flat piece of leather, just large enough for the foot, to be worn, and this may be sewed to any soft stocking-like arrange-

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ment. This serves to protect the feet from tacks, etc. After walking has been established, almost any of the baby shoes may be worn, taking care that they are *big* enough, and that they allow proper expansion of the toes. Going barefoot is all right, and this custom does not, various opinions to the contrary, cause large feet, that is, feet out of proportion to the body. See to it that this same general shape is continued throughout the school age. There is no objection to wearing pumps occasionally, for I find that those who wear proper shoes are quite contented to continue them after wearing pumps at a dance or two. The weight of the patient should be looked after and flesh kept in within normal limits, for added weight means more strain on the arches and their supports. This is especially needed after the age of forty years.

It may be objected that it is not possible to obtain the proper shaped shoes. It is possible, however, thanks to the efforts of Doctor Goldthwaite of Boston, whose pupil I was and to whom I am indebted for much excellent teaching, for he was the first to introduce and have manufactured for the *use* of his patients the right kind of shoe. This shoe and its modifications (some of which, unfortunately, have ruined the original shape and are to be avoided therefore) are for sale and can be obtained.*

(Photograph shown of feet of eight months old baby.)

You certainly would expect to find here a normal foot, but unfortunately it is not. In this picture you will notice how much longer the great toe is in proportion to the other toes. Also notice the spread, how the great toe inclines towards the inside.

I believe there was an effort made to introduce a stocking into this country like the Japs' stocking, with a separate part for the great toe, but I have not seen anything in

*NOTE.—As this paper is not intended for an advertisement for any shoe firm I will refrain from mentioning names here, but will be much pleased to verbally or otherwise give any of you who may be sufficiently interested the names. I am much indebted, also, to Mr. A. T. Johnson of Manchester for his patience and unfailing kindness in developing my series of plates.

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regard to it lately. The reason the baby's foot is deformed was because the bones of ossification are soft and very easily displaced at that time.

(Photograph shown of foot of eight years old boy.)

This print shows the foot of a boy eight years of age. You will see how the centers of ossification are displaced at the outside line.

(Photograph of baby's foot.)

This one gives some idea of the arch in a baby's foot. It is dome shaped, and all side arches are dome shaped.

(Different styles of gentlemen's shoes shown.)

I am sorry I cannot show you any ladies' shoes, but I can give you the address where they can be obtained if desired.

Doctor Goldthwaite of Boston was the originator of a shoe shaped like this. He went into this subject very thoroughly, and after a long series of troubles had a firm on Summer Street in Boston carry an orthopedic model, so called. This orthopedic shoe was made something like twelve years ago, and from that original model have sprung all these other models, and I think perhaps the nearest imitation of that original model is this shoe here, made by the Walk-Over people, and to my mind it is one of the best shapes I have seen. Notice it has an almost straight inside edge, inclines a little bit to the side—just a little bit, but that is towards the upper part. Furthermore it has that gentle curve I spoke to you about, leaving plenty of room for the toes to get a grip. The heel is low. It might be criticised by saying that the heel should come half an inch farther back in order to be anatomically where it should be. Any firm carrying the Walk-Over shoe can supply you with them. It is not made for ladies, however. That shoe retails for $3.50.

This other pair retails for $2.79. It is made in Manchester. I never knew it was made there until three weeks ago, which shows how much we know about our home manufactures. It has very much the same characteristics as

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the Walk-Over shoe; the same straight inside edge—if anything, straighter; has rather more of a curve around here, which is more of an advantage. The firm where I got this kept only the vamp style. I don't know whether it is made in a blucher or not, which style I consider an advantage. The heel is also quite a good heel. I wish to call your attention particularly to the fact that this heel extends further underneath the foot. The German army have conducted experiments and have determined upon the fact that it is easier to walk with a long, low, wide heel than it is with the modern or Cuban heel.

This pair is a little bit straighter and has more of a flare over there, which I personally do not like. The heel is somewhat shorter than the other one and also somewhat higher, and does not come back far enough.

There are of course many freak shoes on the market. One is the shoe made by the F. M. Hoyt Company, called the Beacon Shoe. They have gotten hold of the idea all right and only half carried it out. The good point is how far forward the heel comes, but it should be a long heel. My objection to the shoe is this: That if one happened to step on a stone the ankle is likely to be thrown over, which is very liable to strain or even break it. I would have this other heel continued so that it comes up even, and not have that spur on the side. The vamp is too low; it hasn't the straight inside edge and too little of a curve in here.

This shoe is more expensive, but I can testify from having worn them that they wear better. It has a lower heel and a little bit better heel, but it does not come forward far enough. The shape of the shoe is somewhat better than the other one but not straight enough on the inside edge. In other words, it will crowd the great toe, and your third point of suspension being weakened the arch falls down Furthermore, the two points of suspension where they are crowded out here leads to flattening of the anterior arch, which is fully as bad, I think, as the side arch.

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I want you to think it over, gentlemen, that it is the generation growing up who are going to have the trouble later on. You cannot commence too early. Don't let them do the baby's feet up in a blanket or pinning slips. Give the baby a chance to kick out and stretch. That is the way he exercises. If you give him a chance to, you will see him curling his toes as well as his fingers. Watch him along through babyhood; see when he commences to walk that nothing but a flat piece of leather be sewed on his stockings. Let your children go barefooted. It will not make big feet—not one bit more than they should be, because there is a chance to spread out the big toe. The dangerous age is in the high school. The girls commence to wear the narrow-toed shoes. I remember particularly a little girl who was wearing improper shoes at the age of seven years. I got her feet straightened out, and she had beautiful feet. Then she went to the high school, and in six months she had ruined those feet. It is up to us to create a demand for a properly fitting shoe—a shoe that we all can wear. The ladies say this is not a graceful shoe. The only reason is because we are not used to it. To my mind it is a much more graceful shoe than this narrow shoe. Any time a lady refuses to wear these shoes take an X-ray picture of her toes, and I think she will be convinced.

DISCUSSION.

DR. F. N. ROGERS, MANCHESTER.

I am over twenty, but I don't think I could pass muster. When I was asked to discuss this paper I thought up a few points to talk about, but Doctor Wheat has brought them out so emphatically that it will not be necessary for me to repeat them.

The first thing I did to prepare myself to come up here was to go and call on a chiropodist. I thought I would get

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results there if anywhere. They tell me that the modern foot is injured on the outside, that the corn is on the little toe, and that the most of the women have the callouses on the inside of their feet on the great toe; and in women who wear high heeled shoes the toes are doubled up underneath and they have a corn on each toe.

It occurred to me when the doctor was reading the paper that our duty lies with the children. It is not very hard to get a man to keep comfortable. I think men as a rule dress for comfort, and as they grow older disregard style. As a woman grows older I think she pays more attention to style. And as Doctor Wheat has said, when girls are in the high school they commence to admire their feet with shoes on. A child admires his feet with his shoes off. Other girls that they associate with have gracefully shaped shoes and go to dances and have nice trim-looking feet, and of course they must have the same for theirs. Therefore it is very hard to combat people's vanity, and I don't know of anything any more disheartening than to spend fifteen or twenty minutes talking with a mother about her daughter's feet and find the shoes that you advised against on the child's feet six weeks later. There are some girls, whose parents can afford it, who buy shoes about every three, four or six weeks. They always get tightly fitting shoes, high boots, and they are usually on the feet from the time they get up until they retire. They are laced tight and interfere a great deal with the circulation of the foot, and a great many of them grow up with cold feet.

As I was listening to the paper, it was suggested to me that the stocking the child wears might have something to do with the feet. I think that heavy stockings that fit too tightly might deform the feet to a certain extent.

DR. JOHN G. W. KNOWLTON, EXETER.

It seems to me that the pictures ought to make us all very much ashamed of the feet that we have under us. As

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Doctor Wheat says, the men you can do something with, but when it comes to the women and their shoes, there isn't anyone that can get them to wear a shoe that is not fashionable. I don't think it is possible. At least it is a great exception. I was interested in seeing some of the pictures about the different ages, especially the epiphyses of the bones and phalanges. To my mind, until the child gets up to the age of puberty, or to the age of eighteen or twenty, the foot is growing long all the time, and as Doctor Wheat says, the time to do our work is during the age of childhood. If we put them into wider shoes they are going to have wider feet, the length of the foot depending upon the length of time that the epiphyses and the shaft of the bone get together.

I was speaking to a shoe manufacturer about ladies' shoes. He told me that they made three classes of shoes for ladies—that is, three sizes. A certain class of shoes are made for the ladies of the East, certain ones for the South, and others for the West, the southern shoe being made in size two, two and a half and three, and possibly a little larger. In the East the misses shoe—the shoe for the girl—is two and two and one half. It is an actual fact that the southern ladies wear a smaller size shoe than those of the East. He didn't tell me the size the western ladies wear.

DR. ANNA M. LITTLEFIELD, NEW LONDON.

I want to speak on two points: First, as a woman, it is harder to find a comfortable shoe for a woman than a man. I have often looked with envious eyes on the shoes of gentlemen, who are able to procure a normal shoe to put a normal foot in. But still something can be done by perseverance. I find it necessary when I need shoes to go to a good shoe store, where they have a large assortment of good shoes, and to sit down as if I had come to spend the day, and to say: "I just want a shoe that fits my foot,"

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and when they bring one that does not, say: "I can't wear that because it is too narrow." In another one the last is good but the heel is in the middle of the foot. Sometimes the shoe men get pretty tired. Sometimes when I have asked for a wide heel or toe they tell me that is old fashioned. I say: "I know it is, but my feet are old fashioned." And by sitting all day they will pull out of some corner some old-fashioned shoes, and when I find some I can wear I usually buy two pairs; and I find by having those that the seam comes in a little different place, not the same style, and the change is better for the feet. It seems to me to have a comfortable shoe made for the normal foot is one of the rights women ought to contend for. And in regard to that point about the children caring for the looks, and the young women, young girls such as we have in our academy, when they begin to notice their feet in shoes we want to appeal to the strongest motive, and just as we say to the girl who begins to stoop over that she must stand straight in order to look well, we must say their feet do not look well in a deformed shoe. If we were talking to their fathers and mothers we might say: "You will not be so comfortable in a deformed shoe," but when we are speaking to young girls and children, and young ladies, let us say: "They will always look better with a natural shoe." Present to them that these razor tips, pointed tips, are deformities. Let the light in on them. I know how much light there was let in my mind when I was at an age that I thought I should wear eye glasses because they looked better than the spectacles, and they told me the spectacles looked better, so I wore the spectacles.

DR. LOUIS W. FLANDERS, DOVER.

I don't know that I should dare to rise had I not tried one of the improved patterns. I must say that the person who goes into anatomical shoes is doing missionary work. One year ago this summer I was in Chicago and there came

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up a little rain storm. I went into a shoe store and could not find a rubber that would go over my shoe, and that in Chicago, where they have big feet. The shoe dealer, after working for a while without success, looked at my feet with a grin and said, "Where did you come from?" And after going into four or five other stores I went home in disgust with wet feet. The people where I stayed chaffed me and I offered to wager that my shoe was nearer right than theirs. So we took off our shoes and stood on a piece of paper and marked the shape of our feet. Then we set the shoe over the marking and I won the wager. My shoe covered my foot with a good margin. Sometimes they squashed out over the line of the shoe a quarter of an inch. One other thing, I have a little tendency to flat-foot on one side and I want to emphasize the fact that Doctor Wheat has touched upon, never to allow anybody or yourself to lace down a shoe tight over the instep. It brings the arch down. I have fought shy of all supporters. I find the man who puts a supporter inside of his shoe never gets rid of it. I have been going through a series of exercises and have sneaked in a little support between the leather. I think the ordinary shoe gives down very soon over the instep.

DR. C. R. WALKER, CONCORD.

I have occasion to see a large number of boys from eight and ten to sixteen or eighteen years of age. Those boys wear ofttimes short shoes and short stockings; they are growing so fast. That is a point I think should be emphasized and the parents warned against. I fully believe that the stockings are as much at fault as the shoe. A stocking pulls back as your foot works into it, and if you will stand a boy or man up with an ordinary stocking on, as ordinarily worn, and cut it at the inside of the great toe, I defy you to keep his toe inside of the stocking, which shows that the toes are crowded together by the stocking.

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Some of these shoes are beautiful on the outside, like some of our houses, and a hollow mockery on the inside, or a solid one. Another demonstration I wish every one would make is to take any one of these shoes and from the center cut around to the base of the great toe. In most of these shoes, fashioned on the anatomical last, your great toe will come outside of the cap. That cap is absolutely rigid and is made of four thicknesses of leather. Not only that, but the inner sole tips up so that your foot lies in a groove. And if you find a boy or anyone with ingrowing toe-nail or any fault of that kind, if you will take your shoe and start directly in the center, take your knife and cut back to that point, you will find that the party wearing that shoe cannot stand and get his big toe in under cover. You will find also that the inner sole curls up so as to throw the big toe in towards the center. These shoes give a better opportunity for the big toe than some. In a great many of the shoes the highest point is in the direct center, not on the outside where the big toe should be. I think it would interest you and pay you every one to take an old shoe and cut it from there to there and put it on and see what it does to you. A great deal of the fault today, I am convinced, is done by the rapid growth of the child and the too tight stocking. If I find I cannot relieve a case of ingrowing toe-nail, all that I do is to cut the shoe and also cut the stocking.

DR. H. W. N. BENNETT, MANCHESTER.

Prevention is better than cure and Doctor Wheat has emphasized that this should go back into childhood. There is one point there I think we need to lay emphasis on for a moment. There are plenty of good shoes for children, but also a number that are nowhere near the shape they ought to be. It is not an unknown thing to see children wearing the left shoe on the right foot for the sake of evening up the shoe, and the only difference you can see is where the buttons are placed. The shoe made on that

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last is made on that principle of the line being quite distinct. The forward part of the shoe should be larger, as it has got to spread in order to let the toe out, as Doctor Walker said. We do not find that except in one or two sandals. You should get a child's shoes with considerable spread in front. The foot is practically triangular, with the apex at the back and triangle in front. It looks odd but aids in preventing flat feet. The child is born with a flat foot with a pad of fat underneath, and until it is three or four years old it stays there, until the ligaments of the arch are developed to withstand the burden put on it. After that that pad is gradually absorbed, and if you have a shoe wide enough so that nature can do as it ought to, you will not get flat-foot that way.

DOCTOR WHEAT.

I am very glad indeed the paper has excited interest. That is what I wanted it to do, and furthermore when you get your state report in January some time, read over the article again as a matter of courtesy to me, and read over the comments on it and see how well we support one another.

Doctor Goldthwaite teaches a series of three exercises for those simple cases where no support is needed but where there is a weakening of the arch. These three exercises are done as follows (illustrated):

The first exercise is done by turning the toes in and then raising yourself on your toes, up and down. After you get your balance you can stand there if you wish to. This throws up the arch. Then with the feet parallel turn the feet out like that. That also throws up the arch. The third exercise is with the feet still parallel, rising on the heel. These three done ten times each at least twice a day —oftener if you have time—will do much towards strengthening the arch.

Another thing I might mention in connection with that

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is the French walk. They were noted a long time ago for the easy, graceful manner in which they walk. They walk with the toes down first. If you will remember to do that that will help to strengthen the arch. It gives you that easy, gliding, graceful sort of a movement.

In regard to mechanical supports, I saw a device yesterday, an ingenious thing, which consisted of a shape like this (illustrated): They had a series of little rubber suckers and as you came towards the center they were higher, so that when you put this in the shoe there was just a little bit of gentle spring, and such a device I should think would be a very good thing for a prolapse of the arch. Then if any of you have made supports for the feet, taking a cast of the foot and then making your positive, always remember that the support should come from underneath. It should not come from the sides. If you get a plate shaped like a trough and the foot is crowded together, allowing no room for expansion—crowded together on the sides—you want to put the support *underneath* the foot. It should run very well up to the base of the great toe and well down underneath the heel. One of my old difficulties was the belief that the pressure of the plate on the bones would cause trouble, but it does not. The objection to any plate is the same that there is to wearing a truss. It does weaken the parts through pressure, therefore I object to plates. It is more natural to educate the children and get them under control in twenty years or more so they will have normal feet from the beginning and keep them normal.

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The Responsibility of the General Practitioner and of the Specialist in the Prevention of Deafness.

FRANCIS PATTEN EMERSON, M. D., BOSTON, MASS.

As a preliminary to my paper on the prevention of deafness I want to go over some points in the anatomy of the nasopharynx. The progress of otology, as you are all aware, has been largely along the line of prevention. We no longer give the larger part of our time to the end results, but attempt to get at and treat the cause. This is found, whether it be a chronic catarrhal or suppurative ear, in the nasopharynx. Briefly then we have the two general cavities of the nose. Flanking these cavities on the outer wall are the three turbinated bodies: The superior, middle and inferior. The last exists by itself and is of no special interest. The middle turbinate, however, is of great importance in itself, and also because it is in such close relation with the frontal, maxillary and sphenoid sinuses. It is composed of a large number of cells, which may severally or collectively become infected and contain pus. As it is situated it really overhangs the outer wall of the nose, so that some of the cells discharge into the naris and part into the maxillary antrum. Passing anteriorly is the infundibulum from the frontal sinus, which may have one or several ethmoid cells opening directly into it, or one ethmoid cell may form the floor of the frontal sinus. These sinuses then communicate one with another. The mucous membrane, which lines the cavities of the nose, passes

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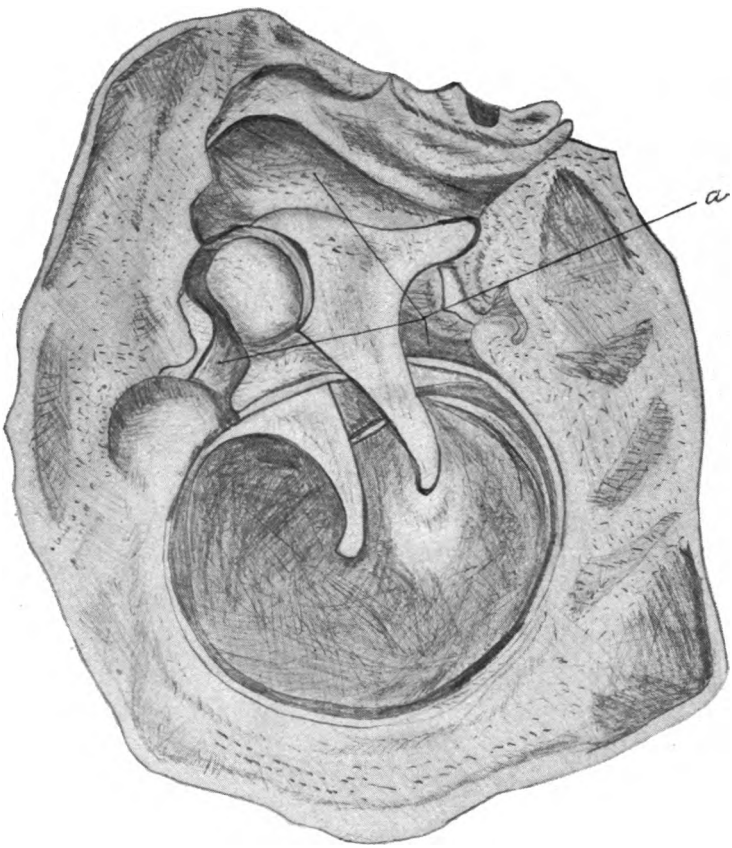

a—Showing large space in the attic which may become infected.

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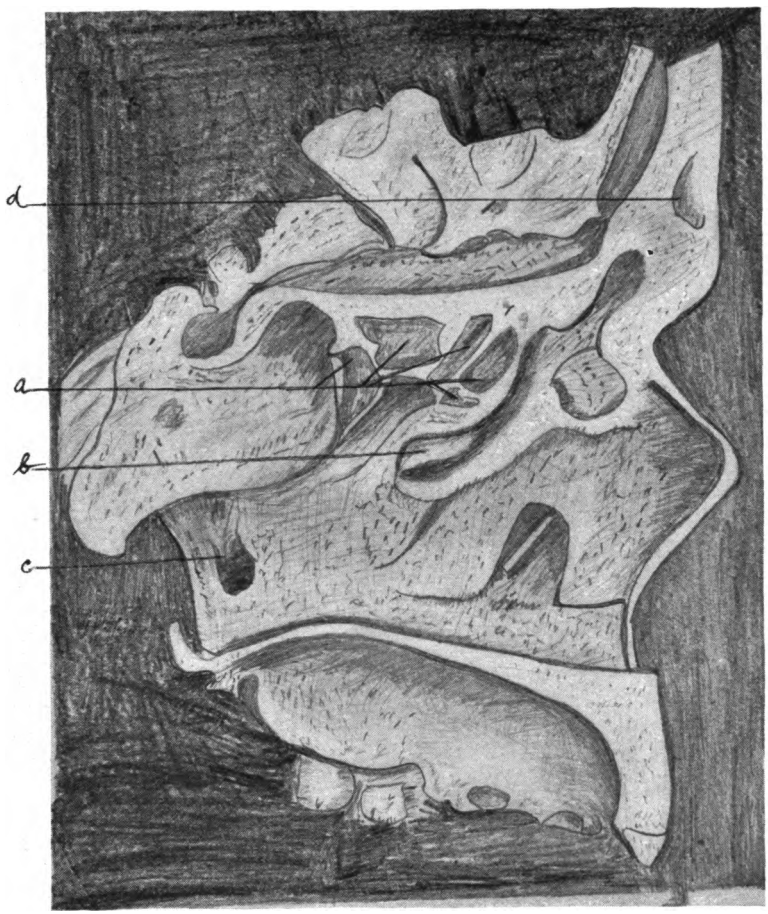

a—Ethmoid cells after removal of the middle turbinated body.
b—Infundibulum connecting with frontal sinus.
c—Eustachian opening.
d—Frontal sinus.

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into and covers the sinus cavities, the eustachian tube, and the middle ear. In the eustachian tube it is thrown into folds, and in the middle ear this hangs from reduplications, which form curtains in the attic. The space in the attic is shown from this cut, No. 1. The face of the turbinated bodies is covered with erectile tissue, and on their posterior ends the glandular elements predominate. In the vault of the pharynx we have the so-called adenoid development, but what is of as much importance to the aurist is the tissue to be found in Rosenmueller's fossæ about the eustachian tubes. This cut (No. 2) shows the middle turbinate removed and the general arrangement of the ethmoid cells, which in many cases of chronic catarrh are extensively necrosed. Inflammation in the eustachian tube is spoken of in the paper as salpingitis.

The preservation of hearing as an economic factor can be estimated when we consider that approximately only one person in ten has normal hearing. From the fact that nature has endowed us with the perception of sound waves beyond the requirements of daily life, that one ear may be moderately impaired without the knowledge of the individual and that functional derangement of the conducting apparatus usually takes place in chronic catarrhal deafness without pain, we can account for the neglect of this important organ at a time when its restoration would be a simple task.

I cannot help thinking that in addition to these reasons we must acknowledge that we are still under the thrall of the old régime, when the eye and the ear were in practice associated, to the exclusion of the nasopharynx, and the main reliance of the general practitioner and even the specialist was the catheter and irrigation.

From a utilitarian point of view I have only to remind you that a person whose hearing is impaired is debarred from gaining a livelihood in the army and navy, our great railroad systems, telephone companies and public service

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corporations, and that he is seriously handicapped in any of the occupations of life. His field of usefulness is constantly being narrowed also by instruments of precision under the stress of modern competition, which require quickness of perception both of the eye and ear. In a very large class this handicap dates back to the primary school, when in the past, as now, a large number of children who have been deficient in eyesight or hearing have been classified as backward or defective. At this age both of these causes are easily remediable, and if we consider this subject simply from the viewpoint of increasing the usefulness of the individual in the interest of the state it is worthy of our attention.

Although much more could be done yet at the present time, in our large cities especially, the children of the poor are looked after infinitely better than those of the well-to-do. The public schools are being carefully watched, and such children sent to the various hospitals. Here they have the cause of their deafness removed, and not only that, but they continue treatment until the hearing has been restored to normal. That the children of our private schools and so-called better class are neglected must be largely the fault of the advice and inefficient treatment of the family physician, who is not alive to the possibilities of the early care and treatment of the middle ear. I believe that the time is near when all children at stated periods of life will be examined for the prevention of deafness, as they now go to the occulist and dentist, and not wait until their nose has no useful purpose and their hearing has been practically ruined.

During the last ten years the science of otology has been revolutionized by the recognition of the fact that the respiratory tract begins at the nose, and that the diverticulum, which we call the ear, shares in its functional and pathological variations from the normal. The mucipa-rous and serous glands of the turbinated bodies and mucous

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membrane are disturbed in their function by faulty nasal development, which increases their activity, or from the constant irritation of pockets of pus, the result of acute infections, but which we still call catarrh and attribute to the climate. In the leisure class nasal hyperemia is further augmented by lack of exercise, overheated and poorly ventilated houses and intestinal toxemia, so that chronic catarrhal deafness is on the whole quite as common as in the poor, although the latter are more exposed to acute diseases. Moreover, the local conditions, which are accesible to simple operative procedures, the hospital patients more often submit to, and this tends to prevent those exacerbations of catarrhal inflammatory processes, which slowly impair the hearing by their effects upon the conducting apparatus. Active suppuration with mastoid involvement compels attention for a while at least, but its effect upon the hearing function is not as harmful as the neglected chronic catarrhs.

Fortunately in our consideration of the causes of deafness we can for all practical purposes leave out of the question any involvement of the auditory nerve, as it is of infrequent occurrence. The major number of cases are the direct result of acute or chronic inflammations, with occasionally one due to trauma or the action of drugs.

LYMPHOID TISSUE.

It is common observation, attested by statistics, that a large per cent. of deafness in adults dates back to the first years of life. At this time the general practitioner is usually in close touch with the family, and could do much to teach them the early symptoms of middle ear involvement and its consequences if neglected. At this time the treatment is certain and the most satisfactory of surgical operations. Not only is the middle ear involvement checked, but the child improves rapidly, mentally and physically. In early life the middle ear is made vulnerable almost entirely from adenoids. Later there are

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the infections from the exanthemata and still less frequently from pneumonia, influenza, etc., but the beginning is a chronic secretory otitis media, which was the result of lymphoid tissue in the vault of the pharynx.

This is an important point, for the majority of these cases have premonitory symptoms, which are usually disregarded by the patient and the family physician. The public should be educated to understand that an earache, however transient, is not due to neuralgia, teething, worms or any other indefinite cause, but is a congestion of the middle ear, which needs careful attention, and that at once. The discomfort of the ear, temporary deafness or pain, will usually disappear for the time, but such an ear will later develop more permanent changes in the mucosa or be invaded by a suppurative process in connection with some more active infection. Under these conditions the middle ear seldom regains its function completely unless the nasopharynx is put in a normal condition, and the atmospheric balance restored through the eustachian tube. If suppuration has occurred it is not enough to stop the discharge, but the original cause, viz., the adenoids, must be removed, the swelling about the eustachian tubes reduced, and the rhinitis cured. One of the first steps in the prevention of otitis media is a consideration of the problems connected with lymphoid development. With children predisposed to adenoid hypertrophy the family adviser must consider and direct the family in such matters as dress, climate, ventilation, exercise, food, dental cares, sanitation, house heating, teeth eruption, the various irritations of the buccal mucous membrane, and general metabolism, as well as the acute infections. Although adenoid tissue is a normal condition with every child when it is associated with chronic secretory ears, follicular pharyngitis and nasal obstruction, one does not need a posterior mirror or even the finger to know that it has become pathological. Parents should be told that the so-called kernels in the neck (cervical glands)

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are not scrofula, but are due to the absorption of toxines from inflammation of the tonsils and adenoids. Before the age of seven we should save the tonsils if possible, but when there is cryptic disease, or the fibrous stroma has developed so that involution is improbable, if the ear is to be protected they should be removed entire, with the capsule intact, together with the adenoid tissue in the vault and Rosenmueller's fossæ. The tonsil and adenoid operation is considered a simple surgical procedure, and so it is, as far as removing a mechanical obstruction to free breathing is concerned. For the aurist there is the added problem of restoring the function of the palatine muscles—which normally open the eustachian tube and ventilate the middle ear, removing the base of diseased tonsilar crypts, which keep up a low grade inflammation and adenitis—and thoroughly cleaning out the fossæ of Rosenmueller.

As far as the effect on the middle ear is concerned, it is not necessary to have any obstruction to nasal breathing from adenoids. Small amounts of lymphoid tissue about the tubes will keep up a serous otitis media. In children under four years old we must remember that an acute otitis media may exist without any symptoms of pain. It is the experience of every general practitioner to have seen a child with a sudden rise of temperature, restlessness and symptoms for which he could not discover a physical cause, although sufficiently active to make him think of some possible meningeal irritation, clear up in a few hours following a discharge from the middle ear. Such cases are referred every week from the infants' hospital to the E. and E. Infirmary, where the membrana tympani is opened with a clean incision and the adenoids removed to prevent further danger to the hearing.

This middle ear involvement, without symptoms of pain, is very common in bronchopneumonia, typhoid fever and influenza, and any complication during the course of these diseases not explained by physical signs should lead us to suspect an acute otitis media.

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Doctors McCollom and Borden at the south department of the Boston City Hospital, in a careful study of the exanthemata, have shown that the middle ear is involved in ten to fifteen per cent. of the cases of scarlet fever; in measles, eighteen to thirty per cent. and in diphtheria one to five per cent. This is probably high for private practice, where the milder types are observed, but is instructive in showing the high per cent. of otitis media attributed to measles and scarlet fever. In both of these diseases the infection is most active and attended by serious consequences to the hearing function.

Every practitioner feels competent to treat an acute ear, but the ordinary routine is most pernicious in its results upon the hearing. The worst cases that come to the hospital are those where the ear has been watched, but without regard to the stage of the disease, the complications that have arisen, or with any effective guarding against the extension to other important parts. Rational care must be based upon direct inspection of the drum. In the early stages, when pain is the only symptom of middle ear involvement, hot irrigations and inhalations of menthol, benzoin, iodine or turpentine to open the eustachian tube, with confinement in a warm room, and a mild cathartic, will suffice. The moment, however, that there is a bulging of the membrana tympani these measures must be stopped and a free surgical incision (not a puncture) made to drain the middle ear. Following these measures irrigations with normal salt or boracic acid solution, a quart every two hours, may be used during the congestive stage, and only then. This stage may last from two to ten days and should be followed by dry mopping and a wick carried down to the bottom of the canal. Under this treatment the average case of otitis media will get well. But—and this is an important matter—if the discharge does not cease in ten to twelve days, it is due to some complication and continued irrigation will only result in the formation of granulation

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tissue, polypi, adhesions and the possibility of dangerous intracranial or mastoid involvement. A discharge from the ear is always a serious matter, but no form of chronic ear discharge has so many possibilities of grave intracranial mischief as the one that pursues an intermittent course. Some of these ears really never stop discharging. Pus ceases to appear externally, and then active treatment is stopped, although, if the ear were tested, a drop would be found in the deep canal, especially in the morning.

It is important then that we know that the discharge has ceased, and then active measures should be used to prevent its recurrence, and the hearing brought back to normal.

Deafness is not so much a steadily progressive disease as it is a constant addition by reinfections of the middle ear. Stop the exacerbations and you can then preserve what function there remains, and possibly restore a certain per cent. of that lost.

ADULTS.

The hearing function in adults is often seriously impaired and sometimes ruined by the action of certain drugs, notably quinine and salicylic acid. These valuable therapeutic agents should be used with caution until you are certain of the tolerance of the patient, and any tinnitus produced is a signal to stop increasing the dose. Trauma accounts for a certain number of cases of labyrinth disease and should be treated energetically before permanent changes result. Acute suppurative otitis media in adults may be due to a number of causes, but the one most active is the infection of influenza. Chronic suppurations usually date back to the diseases of childhood.

Syphilis and tuberculosis are accompanied by marked destruction of the membrana tympani and their onset is usually not attended by pain. Multiple perforations along the border of the drum head are almost pathognomonic of tubercular disease. These cases do badly under irrigation

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and should be kept as dry as possible, using iodoform alone or with boric acid as a dusting powder after mopping.

In discussing the treatment of chronic catarrhal and suppurative otitis media in adults, and the possibility of restoring the hearing function, or of preventing further loss, we have to do with one of the most brilliant advances that can be recorded of any department of medicine. This has taken place almost wholly within the last ten years and very notable additions have been made within the last five years. Although much work has been done in this country of a high order, yet it has been largely modifications of operations originating with Professors Killian and Jansen of Germany. It has been shown that in a large number of individuals there is constantly present a chronic rhinitis. This may have been the sequel of some acute infection, but it is kept up by a faulty nasal development, which produces an uneven air current in the nares. This results in an increased functional activity and hypertrophy of the glandular elements, or the original infection has invaded the accessory sinuses, and the confined pus leaks out into the nares, causing a chronic rhinitis, salpingitis and catarrhal or suppurative otitis media, depending upon the activity of the infection.

The faulty septal irregularities, whereby one side of the nares is partially obstructed by its convex surface, ridges or spurs, may date back to trauma in infancy, to imperfect facial development, a high vault, or, as Doctor Mosher has pointed out, to irregular eruption of the teeth. No one operation in the nose is attended by such satisfactory results as the Killian submucous resection of the septum for the correction of these deformities. Not only is all redundant tissue removed but the plane of the septum is left straight on both sides. As the flap is preserved, it is possible often to get primary union. No hard splints are used and no part of the nares has been removed that interferes with its function. This operation is found useful under

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almost every condition, superseding the crushing and cutting procedures that were so painful. During many acute infections the sinuses are frequently involved. This accounts for the severe headaches, particularly in influenza. With a normal nose, where the drainage is good and there is no thickened condition of the mucosa about the various openings, this will clear up. But with obstructed nares and hypertrophy, particularly of the middle turbinate, there may result a chronic inflammation and suppuration in the antrum, frontal, sphenoid or ethmoid cells. The involvement of these enclosed cavities is attended by characteristic frontal, parietal, vertex or occipital referred pains. These may be simple or complex, depending upon whether we have to do with one or more sinuses. Instead of an acute infection we see very often the accessory sinuses diseased from a focus which started in a diseased tooth and then spread to the antrum and other cavities. Sometimes a general involvement of the sinuses is a local tubercular process or the result of syphilis. Polypi when present are an indication of sinus disease. The worst possible treatment is the old method of tearing these away. They almost invariably return and the operation is attended with trauma and the removal of much healthy mucous membrane. Each growth should be carefully removed with a snare, or the pedicle cut with a clean incision and the offending cell drained. In the case of extensive disease the ethmoid body and polypi may be removed *en masse*, and the field carefully treated on surgical lines. Whatever the cause of the rhinitis the one indication in nasal surgery is to establish drainage and equalize the intake of air through both sides of the nose. This should be done under the surgical rule, to remove only the diseased part and preserve the organ functionally. If one cell is affected drain that and leave the others. If the hypertrophy is compensatory correct the original cause and give nature time to produce a physiological atrophy. Killian and Jansen devised opera-

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tions whereby, if necessary, all the accessory sinuses could be opened through one incision and all diseased tissue removed. This is a very radical procedure, and modifications have been suggested by various workers adapted to each particular case. The important lesson is that catarrh or chronic rhinitis is not due to any climate, but to local conditions, which must be corrected, as well as all swellings of the lymphoid tissue or mucous membrane about the eustachian tubes, if we are to help the hearing function.

The catheter has had its day and is now only of secondary importance to the above indication. The existence of a chronic inflammation in the nose explains why so many infections are so mild and excited from trivial causes, for they are but the exacerbations of a chronic rhinitis, to which the patient has become accustomed.

Work has been done, especially by Kyle, in studying the nasal secretions in relation to questions of metabolism.

Much interest also centers about the use of vaccines, particularly in regard to the pneumococcus and streptococcus infections. These organisms cause an inflammatory action so active and with such serious consequences to the middle ear that it is to be hoped that we may see practical results along these lines. At present we must await further developments. The presence of diseased tissue in Rosenmueller's fossæ in keeping up a chronic suppuration is illustrated in a case reported among others by the author in a previous paper and is observed daily in every large clinic.

June 6, 1906, Miss M. C. Hospital. American, sixteen years. Born in Massachusetts. Gives a history of chronic suppuration since childhood. During this time the right ear has not been dry, except for a period of two months two years ago, while in the hospital for an adenoid operation. The left ear has discharged intermittently. She has been treated regularly at the hospital during this period, and has had an ossiculectomy, besides an adenoid operation. The middle ear was cleansed carefully with a middle

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ear syringe. She is of more than average intelligence and has followed directions carefully at home. During the last two years she has been under the constant care of one of our best men as a private case. She says that during this time there was no improvement that she could see. On June 6 the fossæ were cleared of a mass of soft degenerate tissue that bled as freely as at the average adenoid operation. Within twenty-four hours the right ear became dry and has remained so. The left ear showed possibly two or three drops of pus. Although the right ear has been dry only two weeks it followed immediately the clearing of the fossæ, after treatment had been ineffectual for years.

In chronic secretory otitis media, giving a history of stuffiness in the ear, fluctuating hearing, especially in damp weather, low pitched tinnitus and recurring unilateral salpingitis, there is always degenerate tissue in the corresponding fossa of Rosenmueller. This cannot be seen in every case with a posterior mirror, and under such conditions a digital examination is necessary. This observation the author has verified in several hundred cases.

Of special interest to general medicine as well as to otology is the work that has been done by Wood, Groeber and Goodale on diseased tonsillar crypts. These exist very often in adults as well as in children and has led to the later operation of removing the entire tonsil with its capsule intact. The ordinary examination may not reveal their presence unless the anterior pillow is drawn forward. When present these pockets of pus have a decidedly harmful influence upon the middle ear. Improved methods of examination have shown that many are the seat of tubercular infection, as pointed out by Robertson and others. Experiments on animals show that not only do we get an adenitis from toxine absorption, but that infective material may pass directly to the mediastinal glands and the deeper lymphatics. This would lead us to a careful examination for cryptic disease of the tonsils in all cases in which the

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serous membranes of the heart, pleura and joints are affected as well as such indefinite troubles as rheumatism.

While I have emphasized the local causes, which are open to direct inspection and treatment and are active in the majority of cases, no review of the field that did not take into consideration the influence of the kidney, heart, arteriosclerosis, general metabolism, and in fact every organ of the body, would be worthy of the science of otology as we now understand it.

With the advances made in our knowledge of the pathology of the middle ear we no longer give our entire attention to the end results after the hearing function has been seriously impaired or wholly lost but take active measures to prevent the occurrence or check the advance of acute or chronic inflammatory conditions that were its original cause. In other words, the aurist must be a practical rhinologist.

The surgery of the middle ear and mastoid has advanced from the simple Wilde incision over the mastoid to the application of the general surgical principle, follow and remove the diseased tissue as far as it may lead. To preserve the hearing function we must know not only what to do but, what is of quite as much importance, when to do it. Operations for diseased ossicles, sinus thrombosis, extradural and brain abscesses, the radical mastoid, etc., are too much outside the domain of general practice to be of interest. One of the more recent and striking advances is the operation for opening and draining of the labyrinth, which promises to develop into a successful and regular procedure.

In the crude and partial outline of the wide field covered by the subject of this paper it has been the purpose of the author to show that otology advances by the help of every worker in general medicine and the allied sciences, that the field is constantly widening, and that the specialist and internist should work more together and in a spirit of helpfulness for the common cause. With the perfection of new operations requiring special technic and

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skill the otologist will be fully occupied, and many of the procedures now within his domain will become the ordinary routine of the progressive general practitioner.

DISCUSSION.

DR. L. W. FLANDERS, DOVER.

After listening to Doctor Emerson's paper I am exceedingly gratified to be able to refer to the program and see that there are two more besides me to discuss it. I want to discuss this paper from the standpoint of the New Hampshire physician. I perhaps know full well all the trials and all the obstructions that are put in your way in the treatment of ear disease. I know perfectly well it is the hardest thing in the world for you to get the coöperation of the parents in anything you might suggest. It is a curious fact that nearly all the laws on the statute books are made to protect men against themselves. The day is coming when parents will be compelled to attend to the ears of their children the same as they are obliged to vaccinate them. If you will go into any school-room in any city today you will find children there with running ears. I have seen them and smelt them. It is a fact, and they should no more be allowed in a school-room than to be allowed to come there without a bath. It is perfectly possible to keep that ear sweet and clean, but it means work on the part of the child's parents and nurse. Many of you general practitioners do the adenoid operation. It is very common to do it. And perhaps sometimes you are disappointed in not getting the effect you expected. Let me point out the reason: It is because you do not do what Doctor Emerson has told you—clear out the fossæ. The operator does not want to scrape up the membrane and stop there, but he should go farther than that, and the finger is the only thing he can take out the tissue with. Those

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children have become confirmed mouth breathers and after you have operated on them will still do so. It may be habit or it may be some anatomical deformity of the nose. If it is some trouble in the nose it must be taken care of and nose-breathing established if you are going to get results. In treating all these early ear diseases I would say that the trouble with the general practitioner is that you do not take the time and patience necessary to get the technique. That is, if you are not able to properly expose the canal and drum you do not know what you are looking at when you look in there. Several years ago I sat up nights to make a large plate of the drum head and brought it up here and displayed it. I don't know whether it did any good or not, but if you would take a little time and patience upon some healthy subject and use the speculum and the head mirror, and go easy, you can expose the drumhead and know the true condition. He spoke particularly of mopping. He does not mean going in there with your eyes shut, but means you must know just exactly what you are doing, and you can only do this by keeping it in sight by your head mirror. It is not a very difficult thing and you can accomplish it in a short time. When he says dusting with boric acid he does not mean to fill that ear full of iodoform powder. He means simply to dust that membrane as you would dust the surface of any wound lightly. I have one nurse who will do a thing three hundred and sixty-five times in the year and do it just as well the three hundred and sixty-fifth time as the first, and you would be astonished to see what she has accomplished in some of those cases. She has cured some of them. Some cases may need a radical operation, but any of them can be kept sweet, and it is an abomination that those children should be allowed in school with an offensive, running ear.

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DR. GEORGE A. WEAVER, WARREN.

I will attempt to touch on another phase of this subject, and I think we should review somewhat the causes of deafness before we try to determine what the responsibility of the general practitioner is. Doctor Emerson mentioned a number of them and of course we are all aware that all of the acute febrile diseases are followed by a varying degree of inflammation in the nasopharynx. The question comes to me, do we follow up those cases thoroughly enough and long enough? I think that in a great many cases if the patient begins to feel comfortable the physician drops the case, and probably in a good many cases where the germs of diphtheria could be found the case is dropped by the physician before it should be dropped. If it is possible to find diphtheria germs in the throat for some weeks after the physician ceases to attend the case isn't it possible that those germs will work up into the eustachian tube and keep some degree of inflammation growing there and that a majority of the germs of some other febrile condition work up there and keep up other conditions? Do we follow up these cases thoroughly enough with local treatment, and in the class of cases where it is known that this condition follows the febrile condition might it not be well to follow up the case with some kind of a resolvent treatment? And again, do we pay attention to nourishing patients properly and giving them the tonics that would indirectly reach the mucous membrane and improve it? These are questions, I think, which have a bearing in determining just what the general practitioner can do and how far he is responsible. Another thought: Do we keep up the eliminations from the intestines and kidneys sufficiently long? Quite likely there are suppurative conditions which arise in the ear and the nasopharynx which would not occur if the eliminations from the intestines and kidneys were more thorough than it generally is and was kept up much longer. But the trouble is that cases are dropped too soon by physi-

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cians for one reason or another. Sometimes the family thinks, and sometimes the physician, that after the patient is comfortable it is time for him to cease treating the case. But it seems, if cultures were taken from the throat for a period after cases of diphtheria, that might do something towards decreasing the number of catarrhal ear conditions.

One other subject I have thought to mention in regard to this which may be a cause of deafness. Young boys going in swimming in summer are inclined to swim under water and do diving. I know in my own case that one of my ears was injured and has remained so, and I wonder if a good many boys who are inclined to do a good deal of swimming under water are not injured that way. I think that might be a cause for physicians to advise against.

DOCTOR EMERSON.

I think this subject is of a great deal of interest to the general practitioner, and I quite agree with Doctor Flanders that it should be a part of the routine of every general medical man to be able to inspect the ear, because in pneumonia the middle ear is quite often infected. Some of the worst types of middle ear disease are in connection with influenza, and it should be possible when you have a serious case of pneumonia, typhoid fever or influenza, and you have complications which you are not able to find a cause for, that you should at least be able to know that there is trouble in the middle ear, and on treating this the temperature will drop immediately. I saw such a case last week in a child. The temperature suddenly jumped. There was no additional consolidation in the chest and no indication of pain, yet both of those drums were bulging, and within forty-eight hours after a free incision and drainage the temperature dropped to normal.

I also want to say a word in regard to catarrhal deafness. It seems to be the bugbear of the general man, and

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the public are often told that it is perfectly useless to treat it. It is not a progressive trouble unless you have a cold, and each infection leaves your ear a little worse. So the trouble keeps going on unless that resulting inflammatory condition is looked after. Also an important point is the relation of the nasopharynx to the middle ear. An inflammation, whether it is of a progressive catarrhal type or acute suppurative, should be followed the same as you would follow a surgical operation. You would not think of leaving that until the inflammation subsided or the discharge stopped. The same applies to the middle ear. If there has been an acute case of inflammation do not leave the process to go on there indefinitely. It is unfortunately true that the public have the idea within the last five years that every time they go to an ear man he is going to do something to their nose, and it is practically true because nine tenths of the treatment in the nasopharynx is drainage. Unless you treat the nasal condition, which is the source of the acute exacerbations, there will result in the middle ear a progressive type of catarrhal deafness or an acute suppuration.

One point made by one of the gentlemen in regard to the infection from measles and scarlet fever being still active for a long time after the patient was apparently over it is true. I have, during my last service at the hospital, made a point of looking into the history of these middle ears, and a very large per cent. came on several weeks after they were apparently over their trouble, which showed that the lymphoid tissue was sufficiently infected to light up trouble in the eustachian tube.

There is another thing that is neglected very largely and that is injuries to the nose. Now if a child should fall hard enough to cause nosebleed and it were in any other location on the body we would inspect it and see whether there was not a fracture. In a large number of such cases there is an injury to the triangular cartilage, and nasal obstruction

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and chronic rhinitis result. Poor people have come to know this, and it is quite a common thing for a child to be brought to the hospital to have his nose examined, but in regular practice we do not think very much of nosebleed, which is often the starting point of injuries which later will give a great deal of trouble.

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The Hygienic and Physical Exercise Treatment of Cardiac and Neurasthenic Cases.

JOHN W. BOWLER, M. D., HANOVER.

It is the purpose of this paper to explain the treatment of cardiac and neurasthenic cases, the treatment combining hygienic and physical measures. I have applied this treatment in a number of cases with excellent results.

Among the cardiac cases I have treated in this way have been those of fatty heart, arrhythmia and murmurs due to anemia and dilatation, fatty heart, nervous or neuromuscular trouble, to gastric disturbances, to a general neurasthenic condition, or, as in some cases, due to no assignable cause. Chronic constipation usually accompanies the gastric cases, and oftentimes the neurasthenic.

Less serious than fatty heart, but closely allied to it in some respects, is fatty infiltration of the heart. In such cases there is a great increase in the fat that is naturally present, and with it an infiltration of the muscular substance of the heart-wall. There is a decided tendency to general adiposity, unbalanced by sufficient exercise and elimination. The symptoms are general stoutness, with feeble circulation. Exertion is irksome and attended by breathlessness and slight cyanosis. The breathing is embarassed. The physical signs are soft pulse, with low pressure. Examination of the heart shows no striking change, but the impulse is feeble, the area of cardiac dullness may be pushed slightly upward, and the sounds are faint. The extremities are oftentimes cold.

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In these cases physical or external therapeutic treatment, as we may call it, benefits all cases and permanently cures most of them. The treatment, I may say in beginning, is practically the same for all classes of cases, varying in degree only. It varies according to the condition of the patient, including, where possible, prescribed physical exercises, followed by a bath and then by massage.

The massage is the most generally applicable feature, since it can be given to patients who are too weak to begin with the exercises. General massage, and especially massage over the region of the heart, has a tonic and a sedative effect on this organ. The heart will beat much better and with clearer accentuation after a few minutes of massage. The result is most marked in arrhythmic hearts and in flabby neurasthenics.

I am satisfied, by my brief experience, that the influence of massage in these heart cases is indisputable, though it is evidently more indirect and sympathetic than direct.

In the cases that I have treated I have, with one exception, begun with non-resisted movements, the one exception being first treated with massage for the first week. This was a case of nervous break-down, and the patient had been in bed for several weeks.

The first treatment, the physical exercises, consisting of calisthenic or free exercises, so called, should continue for about ten minutes, the patient meanwhile being closely observed to note the effect. The only resistance the patient should have to overcome is the weight of the part of the limb or body exercised. The exercises should be arranged so as to use but one set of muscles at a time where possible, and they should be repeated about eight times.

In the first exercise, with the patient standing erect, the palms of the hands are brought together a little above the head, the elbows a little above the shoulders. The arms are then brought backward, with the forearms at a right angle to the arms, forcing the scapula back and down

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and putting the pectoral muscles on a stretch. In many cases we find insufficient lung capacity. In this case the patient is advised at the same time to make a deep inspiration. The arms are next returned to the position from which the movement started, bringing into action the muscles of the chest, accompanied with complete expiration. These alternate movements act as a sort of massage upon the heart. Where these exercises are applied merely to increase the tone and size of the muscles of the upper thoracic region they are usually executed more rapidly, but even in such cases the movement is at times executed slowly, in order to secure a deep inspiration and complete expiration. This movment, especially when the deep breathing is added, tends to deepen the chest, to keep the shoulders back and down.

In the next exercise the patient places the fingers of both hands on the occiput, with the arms in a horizontal line. A slight resistance being made with the fingers, the head is slowly moved back in a horizontal plane in such a way that the various points of origin and insertion of the trapezius muscle may be felt. This exercise tends to keep the head erect, to elevate the anterior walls of the chest, and to increase the depth of the chest.

With the hands placed on the hips, the head is next moved laterally in an effort to touch the ear to the right shoulder, and then raised erect. After this has been repeated several times the movement is then executed to the left. Then facing to the front with the head erect, the patient rotates the head several times, as far as possible, first to the right and then to the front; the same exercise is then executed to the left. These exercises are exceptionally good for an anemic condition of the brain, so often met with in neurasthenics as well as in those cases with a poor circulation due to any cause. You can readily see what the effect must be upon the cerebrospinal and sympathetic nerves, plexus, and the various ganglia in the cervical

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region, and reflexly to other parts, by these exercises for the cervical region.

The next class of exercises is directed to the abdominal region. In each case the exercise is several times repeated. With the hands placed on the hips the trunk is bent forward, exerting a pressure upon the abdominal viscera, and then raised to an erect position. The trunk is then bent slightly backward, stretching the abdominal muscles. Next is bent or flexed to the right, returned to the erect and repeated; the same movement is then executed to the left. As we flex the body to the right side we press upon the right lobe of the liver, the right half of the transverse colon, as well as the hepatic flexure, ascending colon, and right kidney, and we approximate the right side of the bodies of the vertebræ. As we flex the body to the left we exert pressure upon the left lobe of the liver, the stomach, the left part of the transverse colon, as well as the splenic flexure and the descending colon, and also act upon the spleen and left kidney. The action upon the spine and the nervous system accompanying it is the same as when the body is bent to the right, except that it now takes place on the left.

The next is a rotary movement of the trunk of the body from the hips, first to the right as far as possible, returning to position. The same is then repeated to the left.

Next, with the arms raised high above the head and the knees kept straight, the body is bent forward and downward as far as possible, the patient attempting to touch the floor with his outstretched hands. Returning to the erect position the patient repeats the movement several times.

After the patient has had several treatments I then add the following movements: He is placed upon his back and his right lower limb is raised to a position at right angles to his body. This is repeated several times and the same with the other lower limb. After a few days both are raised at once. The patient is then asked to raise the

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body to a sitting position, with the hands placed behind the neck. (The attendant should hold the patient at the ankles or have straps to hold the toes so as to keep the legs down.) At first most patients, especially cases of obesity, are unable to perform this exercise on account of the overstretching and weakness of the muscles of the front of the abdomen. After a few days, however, the patient is usually able to perform this at least two or three times, and within two or three weeks I have it repeated twelve times. If it is a case of obesity and the patient past middle life great care should be exercised in applying this last movement. The tendency to apoplexy in fat middle-aged patients should be kept in mind.

As mentioned before, these movements not only act upon the skeletal muscles but by friction and pressure they act as a massage upon the contained viscera of the thoracic and abdominal cavities. They also affect the nervous system through the influence of the alternating action of the muscles and through the friction and pressure upon the viscera and the various ganglions, not only of the thoracic and abdominal regions but of the entire body in so far as the various parts are exercised.

From day to day, as the patient gains in strength and if all the conditions warrant it, additional exercises are given. By the end of the first week the patient is exercising all the muscles of the body.

After the exercise a cold shower or sponge bath is taken and then the patient dries himself, exercising a vigorous friction to the skin with a Turkish towel. The patient then lies on a table in a state of complete relaxation while a general massage is given.

When dependence is placed upon massage alone one does not get the same results as by the combined treatment, exercise, bath and massage in the order named. Massage in itself is only a partial substitute for exercise, for the reason that exercise brings into active play the entire motor

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mechanism—nerve center, nerve and muscle—while the effect of massage is chiefly and directly upon the muscle, its action upon the nervous system being more indirect and sympathetic than direct.

I have for some time believed that the various nervous diseases we meet with are due to a toxic condition of the body and the nervous system particularly. I believe this is due to a retention within the body of the waste or effete materials, acting as toxic substances, due to the insufficiency of the organs of elimination. Rarely do we find the laborer or those whose occupation keeps them in the open air, necessitating some physical exertion, affected with neurasthenia, but rather those of sedentary habits, confining themselves to long continuous hours of mental labor, carrying heavy responsibilities and the accompanying worry that goes with the responsibilities. This class of people rarely, if ever, take physical exercise or properly observe the rules of hygiene, with the resulting effect of inertia of all the emunctories. Hence the retention of the waste materials within the body.

The principle of the combined treatment I use in these cases, physical exercise, the bath and the massage, is to increase the function of all the organs of elimination, to increase the depth of the respiratory movement, to strengthen the myocardium and thereby improve the circulation to all parts of the body, to strengthen the general musculature, and thus to inspire the patient with confidence in himself.

The physiological effect of exercise on the lungs is shown in the following manner: Every muscular exertion is involuntarily preceded by a deeper inspiration than when at rest, thus providing an increased supply of oxygen to substitute that which is used up by the muscular contraction. Exercise then induces respiration; and proportionately to the energy used in the exercise it also accelerates the respiratory act. As the result of this the pulmonary cir-

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culation is improved, and the quantity of air inhaled and of the carbon dioxide exhaled is greatly increased. Since oxygen is one of the chief power-producing elements in the body it is readily seen that to enjoy good health and to be capable of doing much work one needs good lung capacity more than muscular strength, for the former gives one the power of endurance, which is the key that opens the door to success in the struggle for survival. A small lung capacity is noted in the neurasthenic cases.

No tight clothing should be worn during the exercise; all the organs, and especially the respiratory, must be allowed perfect freedom of motion. Since the elimination of carbon dioxide and the need of oxygen are so much increased the air should be as pure as possible. Hence exercise out of doors is the best. If, however, it has to be taken indoors the room should be well ventilated and as far as possible free from dust.

The exercises should be so arranged as not to cause overexertion, since the latter produces pulmonary congestion. Therefore when the exercise causes laborious breathing rest should take place, or better still, I find that respiratory and slow leg movements will remove this condition.

The increase of color and the quickening of the pulse show us that exercise accelerates the circulation.

When a muscle contracts it exerts a pressure on those vessels which are in and around it. The arteries have firm walls, and the blood within them flows forward with considerable pressure. Furthermore, the semilunar valves at the opening of the aorta prevent the arterial current from taking a backward direction; hence the arteries are but little affected by the pressure of the active muscle. The veins have less elastic walls, and the pressure of the blood in them is less. Their valves preventing the current from flowing in the opposite direction, it follows that the muscular pressure drives the venous current toward the heart with increased speed. At the same time the power in the

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arterial current increases. When the contraction ceases the veins in question contain less blood. This causes a suction in these vessels, which force, added to the pressure from the arterial side, causes a new supply of blood to rush in with increased speed, this being repeated at every contraction and relaxation. At the same time the absorption of oxygen in the contracting part causes the arterial current to flow more quickly to it in order to supply the waste the power in front of the arterial current increases. In fact active contraction has even more effect on the local afflux than on the return current from the same part.

Every active movement increases the action of the heart, the ratio being relative to the amount of energy put forth in the exercise.

After the bath is taken the patient is then given a general massage for about thirty minutes. The massage has a most decided beneficial effect; the feeling of fatigue is relieved by massage through its effect upon the circulation and the eliminative organs. The toxic substances produced by mental and physical activities are more rapidly oxidized and removed from the body, while the hastened blood current more thoroughly repairs and cleanses the wearied nerve tissue. Massage not only increases the rapid flow of venous blood back to the right side of the heart, but actually increases its quantity by increasing the flow of lymph from not only the lymph vessels but from the tissue spaces as well.

This is well demonstrated in many arrhythmic cases, where the irregularity is due to a poor return circulation and anemic condition.

In order to show the result of this treatment I will describe a few cases I have treated, each assignable to a different cause. The first, a patient sixty-eight years of age, one whose duties called for a great amount of mental activity and who was more or less under a constant nervous tension and had been so for a number of years, had finally

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reached a point where he found it necessary to relinquish his work, due to an affection of the heart. Several weeks after this he presented himself to me for an examination. The heart was very irregular, weak, and the pulse thready, and tension very low. At the time he was also anemic-looking. The arteries, so far as I could palpate them, were in fair condition. I found no murmurs at the first examination or any subsequent one, the heart being examined before, during and after the treatments.

The treatment was started with ten minutes of light exercise, followed by a cold bath; the treatment was taken at 10 a. m. Three weeks later the hour was changed to 7 a. m., and the exercises were increased to fifteen minutes, followed by the cold sponge bath, and then general massage for forty-five minutes. During the exercise the heart action would improve; after the massage the heart, without a single exception, was regular, with full pulse and tension high, and would remain so from twelve to forty-eight hours. In a short time the exercises were increased to twenty minutes, and the massage to one hour.

One morning at five o'clock the arrhythmia started so violently as to awaken the patient. At 7 a. m., when I arrived, the patient was anxious and uncomfortable. I began the treatment quietly and in a few minutes the heart action improved, and after the massage was completed the action of the heart was absolutely normal, the pulse full, with good tension, and the rate sixty-four per minute. During the day and the following day there was no return of the arrhythmia.

By this treatment the attacks became less frequent and when they did recur were of less intensity and of shorter duration. Ultimately the patient gained so much in the strength of the myocardium and general musculature that he was able to again resume his duties, with some restrictions.

The next case is that of a man forty-one years of age,

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who had a severe nervous break-down. He had been in the employ of a large corporation for twenty years and gradually had risen to a position of importance and great responsibility. He attended so closely to his duties that two years before coming to me for treatment he was advised to go abroad for his health. He spent three months abroad and returned to take up his duties, although he did not feel much improved. A year ago last March he found it necessary to give up his work and go under treatment. His physician advised him to consult a nerve specialist in New York. He did so and on the advice of the specialist went to Atlantic City. He staid there for a few weeks, not only without any benefit but felt he was getting worse. He was being shaved in the barber shop early one morning when he heard one barber say to another, "Did you hear the rumpus last night when they were taking that man out who went suddenly insane?" That settled it. "I packed my trunk and bag and got out of there on the next train to New York." While in New York this man was advised to come to Hanover and treat with me. He did, and when I examined him I found his condition as follows: Physical appearance extremely nervous and anemic. Heart arrhythmic and sounds weak. Pulse, 100. Breathing, shallow. Lung capacity, 180 cubic inches. The flesh cadaverous-looking and the muscles all lacking tone. Weight, 133 pounds.

Treatment was begun June 27. July 17 patient weighed 137 pounds. The lung capacity increased 20 cubic inches to 200, and the heart action greatly improved. August 15, weight 139, lung capacity 210 cubic inches, pulse 78. September 15, weight 142, lung capacity 270 cubic inches, pulse 72, full tension high, and the heart action absolutely regular. The patient returned to his business and has written me several times, and says he never felt better, and he feels that he will take a month of the same treatment with me this summer as a prophylactic measure.

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Another case, that of fatty heart: Patient fifty-four years of age, weight 268.7 pounds, with arrhythmia, heart sounds faint, and dyspnea on the slightest exertion. After eleven days' treatment the arrhythmia disappeared, the pulse being regular and full, with good tension, and the patient has reduced in weight seventeen pounds. He was called away on important business at that time. The result of this case would have been more marked if he could have remained for a few more weeks. A year later I again saw the patient and he stated he did not regain the weight he lost while taking the treatment and that he was hoping to return soon and continue the treatment.

DISCUSSION.

DR. JOHN C. O'CONNOR, MANCHESTER.

I do not believe I could add very much to the comprehensive paper of Doctor Bowler, but there are a few points I would like to speak of. It seems to me that physical exercises in the treatment of cardiac disease and neurasthenia are of even more importance than we think them, and I think the intelligent members of the laity appreciate it as much as we do. For instance, about a year ago we read about a prominent official going out to a resort conducted by Mr. Muldoon and coming back in fine trim to Washington. I do not think a case of that kind ought to get away from a physician. I think it belongs to him, and if we appreciated the importance of this thing as we ought to those cases would not drift away. In cardiac diseases, too, physical exercises and hygiene are very important. I had an opportunity to see one of Doctor Bowler's cases and can testify that massage and general care and systematic exercises did a great deal for it. Then in the treatment of neurasthenia it seems to me that exercise of the brain is just as important. For instance, a man or woman suffering from nervous breakdown comes into a physician's office

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and the physician tells him not to worry. He doesn't do very much for the patient. If you tell a man not to worry he will go out and worry because he worries. We ought to see that his occupation is changed and his mind taken up with other things. A man practising in the city will say, "I don't have time to see that the man does other things." A great many busy men do take time. I remember about Doctor Hall in Marblehead. He is a very busy man and has had a great many of these cases, particularly school teachers, who had come to him suffering from nervous break-down. Medical treatment was not doing very much for them so he established a small shop there in Marblehead and called it "The Arts and Crafts Shop." They go into that shop and have suitable instructors to teach them to mould picture frames, frames of mirrors, and things of that kind, and the articles are sold and there is a great deal of enthusiasm among the pupils working in the shop. It has been said that he takes them and makes of them successful artisans. In fact I have a frame of a mirror moulded there and people consider it very nice work. This simply shows what a man, no matter what he has on his mind, can do with these cases if he cares to. Also it seems to me that in tubercular cases exercise plays a very important part. A few years ago patients sent to a sanatorium were advised to rest and eat as much as they could and advised not to exercise. Now it seems to me in certain types it is very important they should exercise. These patients go away to the sanatorium, do not exercise, are fat, and look pretty well, but are not. A patient coming back in that condition is a burden on his family and on himself. As a matter of fact, if the temperature is not above normal he should be advised to exercise. Of course not too strenuously, but should be advised to take some exercise. I had a man about a month ago who had been taking regularly a five-mile walk every day, regardless of how he felt. I took his temperature and it was something like 102. I

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had him buy a thermometer and had him take it home; told him how to take his temperature and pulse and to keep quiet when it was above normal. He followed out my directions and kept a little notebook, and came back and reported to me; abolished the walk and kept quiet when his temperature was above normal and exercised when below normal.

I was reading in the *American Medical and Surgical Journal* of a peculiar type of headache, over the temple and behind the ear, and it was stated that gentle massage carried out systematically every day and an ordinary amount of exercise will do a great deal to help it.

DOCTOR BROWNRIGG, NASHUA.

I corroborate everything we have just heard. I think the suggestions are admirable in regard to the value of massage. I think the general practitioner in all diseases where the patient is not sick enough to prohibit it sanctions exercises. I think the physical exercise, the same as has been outlined by the doctor or as is carried out in various gymnasiums and Y. M. C. A's. is very beneficial. Although there may be a little difference in method they might be in principle and result fairly alike. As to the specific effect of massage on neurasthenia, I think it has a nutritious effect on the whole body that is of permanent benefit. I have only of late thought that the improvement of the general physical condition of nurse and patients was the prime cause of the variations in their feelings, but that it was the prime cause in the permanent health we were able to prove in neurasthenic cases. I have never found a neurasthenic that was really anemic. I think they are pale because the capillary system is so contracted as to leave the patient very pale. So I think no one can help to realize with the writer of the paper that which impresses itself undoubtedly upon the patients for the success of his treatment in nueras-

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thenia. I could not criticize so well the heart cases because I am not so familiar with them.

DR. H. W. N. BENNETT, MANCHESTER.

I also think that Doctor Bowler has given us food for thought. I will speak of an instance that occurred in my own experience shortly after I came to Manchester. The case was sent to me by another physician, not with the idea that I could do any good, but hoping I would do no harm. The liver and lungs were congested and there was an acute condition of the heart. The family expected the child would die immediately, and inasmuch as it did not, they, like all human beings, began to see if something could not be done for it. They heard of an institute something like Muldoon's and wanted the child sent there. Of course that would be the last thing for the child to do in that condition, and I simply told them the child needed rest, and practically the only thing to be done was to go walking, with the instruction that the child should not even go up a flight of stairs—that he should be carried up. The result was that the child got well and graduated from the high school in Manchester. He was able to carry on his studies simply by means of rest and hygiene.

DOCTOR BOWLER.

I will mention another case, a beautiful specimen of manhood, who came from Washington. Weight, 140 pounds. Nervous dyspepsia and nervous break-down. I was introduced to the patient, who looked like an insane man and acted like one. In three months' time he went from 140 to 182, and returned to his business, and from that day to this (it was about fifteen years ago) I don't think he has had any trouble. I did not pay any attention to his pulse or heart. I could cite case after case of this kind.

Had one case that went in eleven days from 268.7 pounds

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to 252. Case of fatty heart. Had considerable difficulty in breathing. Didn't want to get around or about. Stayed only eleven days and never has been back.

Another man. Loss of appetite. Did not lose much weight. Weight, 236. Gave him two treatments and kept him there in my town and he was reduced twenty-six pounds in two weeks. His pulse is regular and that man is getting on and doing well, and enjoying life better than before.

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Some Recent Items of General Interest in Neurology.

DR. ALBERT E. BROWNRIGG, NASHUA.

About a month ago I was asked to address our local society in Nashua on this topic, and, later, was requested to repeat the same here today.

Diseases of the nervous system have always constituted a large and troublesome factor in general medical practice. This has been due in great part to the inherent difficulties of the subject and the distressing forms of the disease processes, and in some part to the general lack of interest in a specialty which was somewhat neglected in the curricula of medical colleges.

Gradually, however, in late years a remarkable change has been wrought in the attitude towards these affections. Research in pathology and bacteriology have enabled many of the old-time theories to be supplanted by definite knowledge. The finding of tubercle bacilli, the meningitis diplococcus, the pneumonia germ, and even the bacilli coli communis has revolutionized the consideration of the pus-forming affections of the central nervous system, while the tracing of the various nervous tracts in the brain and cord has revealed a simple explanation of phenomena otherwise incomprehensible.

So rapid has been the progress that text-books on organic nervous diseases have to be revised as often as those in surgery and other departments of medicine. "The investigations and discoveries in neurology during the past ten years have made the diagnosis of nervous diseases less dif-

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ficult and more exact, so that it is now possible to trace any symptom presented by a patient to some disturbance of function in a definite nerve center or nerve tract. And as the knowledge of these centers and tracts has grown, as their location has been made clear, the meaning of symptoms previously perplexing has become plain."

"Accuracy of diagnosis has led in turn to precision of treatment and especially to the application of surgical measures for the relief of diseases formerly considered incurable. There are few departments of medicine in which more remarkable progress has been made than in neurology; and there is none that lies so openly on the borderland between medicine and surgery. The surgical successes in the treatment of nervous affections are among the most brilliant of the recent achievements in this domain." We thus see, too, the interdependence and essential unity of the various departments of medicine.

The public has always shown its appreciation of advances in medicine by providing endowments for research and better hospital facilities for the proper treatment of its sick. They are a community's best investment and a good index of local wisdom and foresight.

Thus as we find, coincident with the progress of neurology in general, a well marked effort for the better understanding of those cases associated with insanity, we also find a marked betterment or, we should say, a general reorganization of the old asylum régimes to further the plans and purposes of modern hospitals.

When the legislatures of the various states were recently asked to change the name of the asylums to that of state hospitals many facetious remarks were sometimes made at the supposed arrogance of the trustees in acting the part of the jackdaw wearing borrowed feathers. But such critics were themselves ignorant of the subtle change that had already come into the professional attitude towards this whole class of nervous affections.

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Professional effort in asylums had changed before the change of name. The old idea of keeping and holding from their homes a dangerous and undesirable class had given place to that of caring for, treating and curing definite nervous diseases called psychoses.

How many men, I wonder, realize that our state hospitals send out recovered about twenty-five per cent. of all those admitted, exclusive of alcoholism and other drug habits? And these admissions necessarily include many decrepit old persons. I think it would easily be capable of proof by statistics that psychoses in young and middle-aged persons are as amenable to treatment as like serious illnesses of the heart, liver or other vital organ.

And perhaps I may be allowed to digress at this point to emphasize a fact too little realized, I am afraid, *viz.*, that insanity is not a disease but a legal state. A typical psychosis may run its course to recovery without any need for commitment as insane, while another with the same disease may become mentally unbalanced and need such commitment for legal reasons.

Insanity and mental disease are not interchangeable terms, yet I have known physicians to diagnosticate "insanity" as if it were *the* disease, which effectually thereafter barred the patient from further consideration by ordinary medical science.

But to return to the progress in neurology. Just as the first news of the discovery of a promising mine is immediately followed by exploitations of prospects anywhere in the same district, so when the studies of mental diseases by physicians had uncovered possibilities of influencing patients by psychological methods there were those who jumped far beyond the real authority of science and exploited similar ideas as a panacea for all the diseases incident to humanity.

We are all familiar with the wholesale claims of Christian Science to cure everything; with the teachings of mental

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science, which keeps people from becoming sick; of some of the mysteries of Divine Science; of the various Health Club and New Thought dogmas, and lastly that psychological incantation of incomprehensible terms, which, taken with religious convictions, is calculated to produce a painless Emmanuel Movement effect, provided only that some doctor will pronounce the trouble of a functional nature.

I think, gentlemen, that all these cults and theories have been proven time and again to be but wayward exploitations of incomplete scientific findings of physicians engaged in mental research. And just as unfortunate stock market exploitation of prospects may injure the reputation of a locality and hinder the development of a good mining proposition, so unthinking investment and dependence on these theories in emergencies may bring discredit on the honest achievements of scientists and apparently hinder for a time their power for good.

While, of course, the majority of people are not associated with these cults, it may be said that their continued vigorous propaganda of the use of suggestion in disease bids fair to place neurology in the lime-light of interest and faddism so long exclusively directed towards abdominal surgery. This may not be an unmixed evil. If the surgeons, however, do not speedily invent some more startling secret of their success than mere cleanliness and skill, discover some new organ to be taken out, or more expensive gland or part to tamper with than the commonplace ovary or appendix, I am afraid the signs portend a wholesale cry for psychotherapy.

In this state of the popular pulse it is well for us to review knowledge of mental diseases, that our professional advice and direction may not bring confusion and regret. The shortest way to do this, perhaps, is to run over a good classification of psychoses and brighten our mental pictures of these diseases.

Most physicians interested in nervous diseases classify

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mental affections as definite disease entities, or that they need diagnosis and treatment distinct from one another, just as different fevers are treated differently, and I have rearranged Kraepelin's classification for the purpose of this talk,—somewhat different from what he publishes, but it is essentially his accepted classification.

PSYCHOSES.

1. Toxemias.
   a. Drug Psychoses.
   b. Infection.
   c. Thyrogenous.
2. Exhaustion Psychoses.
3. Manic Depressive Psychoses.
4. Dementing Psychoses.
   Dementia Precox.
   Involution Psychoses.
   Organic Brain Lesions.
   Paresis Sclerosis.
   Apoplexy, etc.
5. Paranoia.
6. Constitutional Instability.
   Hysteria.
   Epilepsy.
   Fears.
   Impulse.
7. Defectives.
   Imbeciles.
   Idiots.

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DISCUSSION.

DR. T. D. LUCE, PORTSMOUTH.

I had not had the advantage of reading Doctor Brownrigg's paper or knowing very much about it until I heard it at this time, but I must say I have been very much interested and I certainly regard it as a very valuable contribution to this meeting. I have always felt that the classification of nervous diseases into the general term of visional and organic was a rather unfortunate one for all of us, a little too broad, and does not mean what it is intended to mean really, and I think that in a great many of these so-called visional diseases, as we term them where they are products of the patient's imagination, there really exists some organic cause, and we do not recognize it. And it seems to me that granting this is so, as the doctor says, the indiscriminate referring of these to priests and laymen can in the end only work a great deal of harm, both to us and to our patients. I am sure, for one, that I do not feel an ability to decide this matter personally. I don't think that I know enough about it to recognize the case that needs suggestive treatment. I have always remembered the warning in regard to hypnotism, and suggestion is a part of hypnotism without any question. Of course, I don't feel I am able in any nervous case to tell whether it should be treated in that way. I should certainly want the opinion of a man who was farther advanced in nervous diseases than I am myself. It seems to me these new movements he has spoken of will probably in the end do us a great deal of good. I think all of us probably do not take the interest that we should in this matter unless we specialize in this line. Probably most of the members of this society are capable of diagnosing and curing cases of appendicitis, for instance; but very few of us, I think, intelligently treat and take the interest that we should in nervous diseases.

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C. H. DOLLOFF, CONCORD.

Being drafted here as I have been to discuss this paper, I hardly feel qualified to give it the intelligent consideration it deserves. I think Doctor Brownrigg has covered the ground that he intended to very thoroughly and carefully. It is interesting to note, in looking over his classifications, that they are divided according to the prognosis in the case.

The first ones, what he has termed "visional," are recoverable cases, whereas the later ones, the organic, are perforce non-recoverable, and in that respect it offers us a clew as to the reason why the so-called quacks are able to draw so many patients. They confine themselves chiefly to the recoverable cases, and I think that it could be safely said that those cases get better in spite of the treatment they receive from these so-called psychotherapeutists, because their whole tendency is toward recovery, and if given half a chance will do so. It has been my observation in the hospital cases that come there classified under this first classification that they do not require any specific treatment. They simply require the housing that the asylum gives them, and I like to use the word "asylum" in this respect. It is to them a place of refuge, and they are thrown in there with a class who are defective like themselves, and realize it to a certain extent, and no longer feel their uneasiness, and by simply taking care of them and guiding them along safely for a few months they recover. Rather than send such cases to the minister, it seems to me that we can do better to direct our energies towards the shaping of these psychopathic wards in the general hospitals, where these recoverable cases can go and be classified as simply in for general hospital treatment and be given time to right themselves. It is much like guiding a case through typhoid fever or pneumonia. You do not cure the typhoid or pneumonia. At least I think you do not. It seems as though you simply support your patient until this storm has passed over, and the analogy is very

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good with these brain diseases. Oftentimes I think they get into the hands of these so-called constitutional psychopaths or quacks, who simply get their money and stimulate them for a short while, like giving a dose of strychnine, and they entirely react from that and you have to employ something else. It is those cases, jumping around from hypnotism to other things, that have a tendency to never get well and that do not.

DOCTOR BAKER OF MASSACHUSETTS.

I am very glad to have seen this paper on the program, because I think as a general thing medical societies are neglecting this line of work. According to the last statistics, there are over one hundred and sixty thousand insane people in the United States. In the state of Massachusetts there are probably twelve thousand in institutions cared for by the state. The Lord only knows how many there are in the community at large. A person who has a nervous trouble, as it is termed, be it visional or organic, should not be subjected to the stigma that he has been in the past. The nervous and visional disorders are beginning to take their place along with other disorders and be looked upon in a different manner. There is a saying that you give a lie an hour's start and it takes a year to catch it. Years ago our ancestors believed in witches, believed they could go from one to another, and also believed in devils. In the time when the old Bedlam institution was established, somewhere about 1200, in England, one of the first insane hospitals in the British Isles, they thoroughly had those beliefs. It was established under the name of the Star of Bethlehem, but Bethlehem gradually became Bedlam. They used to pay a shilling then to go in and look at the patients, the same as we would into a two-ring circus. The insane person or nervous person is given more consideration in the courts because they are due it. Every little while the plea of insanity is overdrawn in the courts. The lawyer takes

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that pretext to get his client free. But behind all that there is this truth, that a great many people who get into the courts for offenses are weak persons, and many of those persons who are examined are found to be mentally weak and nervously weak, not all of them so much so that any importance is attached to it. There is a law which provides and permits the judge in some cases to temporarily commit the unfortunate to an institution for observation, or call in a physician for determining his condition. A short time ago an accident occurred which called attention to this special class of cases—the shooting of a couple of men at the state house in Boston,—and there was appointed at that time a special commission to codify the Massachusetts law relative to insanity and nervous disorders. I don't know whether the code of laws made up has passed, but it recommended several advanced measures, recommended that patients be permitted to go to an institution. They already can do that, but it increased the facilities, made several other arrangements for treatment, so that a person could get in without making a nuisance of himself, without demonstrating to the local physician that he was insane. The president spoke this morning of some limit to the procreation of persons who have an inherited nervous trouble by resorting to sterilization. In connection with Doctor Brownrigg's paper I would say that in some places steps have been taken—for instance, in Kansas they passed a law four or five years ago making it a six years' sentence and a fine of three hundred dollars for a clergyman or any person to perform a marriage rite for an imbecile, idiot or epileptic, unless the woman had passed the child-bearing period.

It is a social problem largely, and one of extreme difficulty and delicacy in handling, but is a question which should be alive and looked after. The insane, the feeble-minded, the epileptic, the neurasthenic, and all persons affected with nervous diseases, are entitled to different un-

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derstanding. The communities are filled with people who are different from you and me. They commit some offense and are said to have a "wild eye," different from someone else's, and that they possess superhuman strength. They do not. The average person, as a rule, who has been affected more than six months, does not have the strength or physical health the average man or woman has. Nor does the eye look any different from the ordinary person's eye. I think Doctor Brownrigg's paper was very ably presented, and I think it is a subject which should be brought more to the public. In Massachusetts they have popular lectures on the subject and endeavor to correct some of the errors which have been following this unfortunate class of people.

DOCTOR BROWNRIGG.

I only wish to thank those who have criticised the paper so leniently, and especially to add my word in corroboration of everything Doctor Baker has said. I think Doctor Baker was only introduced casually this morning when he came here. Perhaps it is not generally known that he was assistant physician at the Concord Asylum in Massachusetts for a number of years and is spoken of as one well versed in his specialty.

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Reports of County Societies.

CENTRE DISTRICT AND MERRIMACK COUNTY.

P. T. HASKELL, SECRETARY.

The meetings of the society are held on the second Tuesday of January, April, July and October.

At the quarterly meeting held on July 14, 1908, the society was entertained by the physicians of Suncook at the residence of Dr. Geo. F. Munsey. Papers were read by Drs. Anna M. Littlefield and James B. Woodman. Luncheon was served and after a social hour the meeting adjourned at 2.30 p. m. Members present, twenty-three.

The October meeting was held at Dr. Chancey Adams' cottage at Pembroke, the society having as guests the Manchester Medical Association. Dr. Harvey P. Towle of Boston read an interesting paper on "Diseases of the Skin." Members present, twenty-four.

The eighty-seventh annual meeting was held Tuesday, January 12, 1909, at the office of Doctors Conn and Sanders. The meeting was called to order at 11 a. m. by the president, Dr. E. E. Hill of Suncook. Cases were reported and a very interesting paper on "Hydrotherapy" was read by Dr. J. B. Macdonald of the N. H. State Hospital.

The following officers were elected:

President—John W. Staples, Franklin.
Vice-President—Arthur K. Day, Concord.
Secretary-Treasurer—P. T. Haskell, Concord.
Chaplain—Rev. W. Stanley Emery, Concord.
Delegates—E. E. Hill, Suncook; Sibley G. Morrill, Concord.

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Censors—C. H. Quinn, Concord, one year; Anna M. Littlefield, New London, two years; C. H. Dolloff, Concord, three years.

Committee on Program—President, Secretary and R. J. Graves.

Committee on Public Health—Roscoe Hill, D. E. Sullivan and Russell Wilkins.

Members present, twenty-nine.

Adjourned at 1 p. m.

The April quarterly meeting was held at the Margaret Pillsbury General Hospital, Concord. Resolutions were read on the death of Drs. Henry Augustus Weymouth of Andover and Frederick Russell Cummings of Concord. A paper on "The Use of Fat-Free Milk in Infant Feeding" was read by Dr. H. H. Amsden of Concord, which was freely discussed.

Adjourned at 1 p. m.

The society has seventy-seven active members and five honorary.

During the past year the society has taken in four new members and lost three by death.

CHESHIRE COUNTY.

WM. M. ROBB, SECRETARY.

The following members were admitted during the past year: W. P. Craig, Walpole; Bayard T. Mousley, Alstead; Arthur F. Weston, Keene; J. Mariner Thompson, Walpole.

The society lost the following members through their removal from the county: A. A. Pratte, Keene; O. L. Corliss, Walpole; C. B. Albright, Keene.

The summer meeting was held, by invitation of Dr. James A. Craig of Westmoreland, at the county farm, West-

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moreland, Tuesday, June 9. There was a good attendance and Doctor Craig also had as guests Doctors Allbee, Hill and Miner of Bellows Falls.

Following a very fine dinner Doctor Craig presented a comprehensive paper on "Melancholia," which was followed by a general discussion.

The remainder of the day was spent socially and at its close the genial host was tendered a vote of thanks for his hospitality.

The annual meeting of the society was held at the Cheshire House, Keene, October 13, 1909, 11 a. m. The following officers were elected:

President—A. A. Pratte, Keene.
Vice-President—A. W. Hopkins, West Swanzey.
Secretary and Treasurer—William M. Robb, Keene.
Censor—W. H. Aldrich, Marlow.
Delegates to State Medical Society—John D. Proctor, Keene; Bayard T. Mousley, Alstead.

The following papers were read:

"Hospital Abuses."
S. M. Dinsmoor, Keene.

"Treatment of Diffuse Septic Peritonitis."
W. F. Hazelton, Bellows Falls, Vt.

"A Narrative of Medicine in Cheshire County."
G. C. Hill, Keene.

"Endocarditis in the Young Adult."
B. T. Mousley, Alstead.

These were interesting papers and were discussed at length.

Doctor Hazelton was tendered a vote of thanks.

The mid-winter meeting of the Society was held at the Cheshire House, Keene, February 10, 1909, 10.45 a. m.

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In the absence of both president and vice-president Dr. Frank M. Dinsmoor was elected chairman.

The subject of contract work was disposed of as follows:

That contract work in Cheshire County shall be defined as follows: All town, city, county, state and fraternal work and work for a lodge, society, organization or corporation for which a fixed salary is given.

No member of the Cheshire County Medical Society shall do contract work, and its members are prohibited from consulting with any physician doing such work.

No member shall attend town, city, county or state patients, or attend the members of, or answer calls for, any society, organization, lodge or corporation, for less than the regular fees of the town or locality where such society or organization is located. The penalty in each instance is expulsion, by vote of the society, from its membership. This shall go into effect April 1, 1909, in all cases except where members are legally bound by contract, in which case it shall go into effect at the expiration of said contract.

A copy of these transactions shall be sent to every member of the society.

W. M. ROBB,
Secretary.

A. W. HOPKINS,
Vice-President.

The resignation of the president, Doctor Pratte of Keene, was read and the following resolutions adopted:

Resolved, That in the removal of our colleague, Arthur A. Pratte, M. D., from this community the Cheshire County Medical Society and the medical profession of the county sustains a distinct loss.

Resolved, That in recalling with pleasure and appreciation his genial nature, his generous character and his professional abilities this society extends to him in full measure its heartiest and best wishes for his future career.

After the transaction of business Dr. Geo. H. Foss of

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Hinsdale read a paper on "The Leucodescent Light, with Report of Some Cases."

Following a discussion of Doctor Foss' paper the meeting was adjourned for dinner, after which an address was given by Prof. Chas. M. Whitney of Tufts College Medical School on "Modern Methods of Diagnosis and Treatment of Genitourinary Diseases, with Especial Reference to Chronic Urethritis." Professor Whitney was assisted by Doctor Pierce and showed slides, charts, instruments and specimens.

A vote of thanks was tendered them for their very instructive paper.

STRAFFORD COUNTY.

H. O. CHESLEY, SECRETARY.

The centennial anniversary meeting of the Strafford County and District Medical Society was held at city hall, Dover, N. H., Thursday, October 29, 1908, at 11 a. m. The following officers were elected for the ensuing year:

President—L. W. Flanders, Dover.

Vice-President—T. J. Dougherty, Somersworth.

Secretary—H. O. Chesley, Dover.

Treasurer—A. N. Smith, Dover.

Auditor—M. B. Sullivan, Dover.

Censor—For three years, G. P. Morgan, Dover.

Delegate to House of Delegates, N. H. Med. Society, for Two Years—C. C. Rogers, Farmington.

Orators—Frank S. Weeks, Milton; Linwood Keene, Dover.

Reporters—C. C. Rogers, Farmington; M. A. H. Hart, Milton; F. L. Keay, Rochester; J. H. Bates, E. Rochester; J. E. Whitney, Rochester; H. O. Chesley, Dover; E. C. Batchelder, Dover.

No formal papers were read.

President's address, D. L. Stokes.

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An historical address, L. W. Flanders.

After dinner speakers: M. C. Lathrop, A. N. Smith, J. H. Neal, F. L. Keay, Inez Ford-Nason.

HILLSBOROUGH COUNTY.

ELLA B. ATHERTON, SECRETARY.

Twenty-seven new members were added at the fourth annual meeting. The secretary sent out return cards to every eligible non-affiliated physician in the county and a program with a special invitation to attend the meeting. She also made lists of all the non-affiliated members and sent to seventeen physicians in different parts of the county asking them to secure at least one new member. There remain now probably not over thirty or thirty-five physicians who *ought* to be members. The remainder in the county are either too old to wish to attend or are out of practice, or are not eligible. We now have 113 members.

Doctor Greeley reported that two cases of practising without a license had been brought to his notice and that he had taken the proper steps to prevent a continuance of their practice.

It was voted that the chair appoint a committee of three to investigate any cases of persons practising without a license that came to their notice or that should be reported to them, and to take the proper steps to stop such practice. The chair appointed Doctor Atherton (the secretary), Dr. G. D. Towne and Doctor Hutchinson.

The committee on fee table for the country doctors asked for more time and were instructed to report at the next meeting.

Doctor Wilkins was instructed to get the opinion of the House of Delegates as to how much time should be allowed delinquent members to pay dues before suspending them. It was the opinion of the meeting that two years was long enough.

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Papers read at annual meeting April 6:

"Milk and Its Relation to Disease."
Henry W. N. Bennett, Manchester.

Illustrated Short Talk on "The Horrible Example of the Modern Shoe."
Arthur F. Wheat, Manchester.

President's Address.
A. S. Wallace, Nashua.

Officers:

President—Eugene Wason, Milford.

Vice-President—John H. Gleason, Manchester.

Secretary-Treasurer—Ella Blaylock Atherton, Nashua.

Delegates—George C. Wilkins, Manchester; N. F. Cheever, Greenfield; Frank E. Kittredge, Nashua.

COOS COUNTY.

F. W. EVANS, SECRETARY.

Officers:

President—W. H. Leith, Lancaster.

Vice-President—J. J. Cobb, Berlin.

Secretary-Treasurer—F. W. Evans, Coös.

Censors—For one year, L. B. Marcou, Berlin; for two years, W. H. Leith, Lancaster; for three years, E. F. Brown, Groveton.

Delegates to State Society—J. J. Cobb, Berlin; G. H. Morrison, Whitefield.

The members of our society remain the same as reported before.

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BELKNAP COUNTY.

A. H. HARRIMAN, SECRETARY.

The Belknap County Medical Society has changed its constitution so that the annual meeting will occur on the second Monday in April, to comply with request from the New Hampshire Medical Society. This society holds monthly meetings, excepting the four summer months, July to September inclusive, at which there is a fair attendance and usually there are two papers read. There has been no change of membership the last year.

There are thirty-six physicians in this county. Of these there are thirty-one regulars and five homeopaths. Nineteen are affiliated with this society and seventeen are not affiliated.

This society has held monthly meetings during this fiscal year since October, 1908.

President—A. J. LaFrance, Laconia.
Secretary—A. H. Harriman, Laconia.

GRAFTON COUNTY.

GEORGE A. WEAVER, SECRETARY.

The past year has not been an especially eventful one with us, but we have added to our numbers five new members and have lost two valued ones by death.

Our meetings have been held regularly and have been well attended, and the papers read and discussed have been very interesting and instructive.

During the past year newspaper paragraphs mentioning the names of physicians and surgeons in connection with cases they have been attending have become objectionable; and, upon vote of the society, a circular letter was sent to all newspapers printed in this county and others that circulated here, requesting that physicians' names be omitted

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from news pertaining to sickness. The publishers have very generally complied with the request.

The members of this society feel strongly in regard to a condition that exists at Lisbon—the fact of a physician of that town practising medicine without a license and thereby violating the provisions of the medical pratice act of this state. As we understand the matter, this man has tried and failed the medical examinations at least twice, and in the intervals between failures continues the practice of medicine. We would like to know how many times he is going to be permitted to try the examinations. Is there no limit to this thing? By what right, too, is he allowed to practise in the interval between his failures? As the matter stands now, this man appears to be enjoying a sort of indefinite probation, with no prospect of its termination. Acting upon instructions of this body, early in the year I wrote the regent of the board of medical examiners in regard to this matter. His reply admits the facts as I stated them in my letter to him, but that it is not the function of the medical examiners to prosecute; and he suggests that we appeal to our county solicitor. This has been done, but as yet nothing has been accomplished.

Our society has suffered the loss of two able and greatly respected members during the past two months—Drs. Milton S. Woodman of West Lebanon and Henry A. Hildreth of Bethlehem. These men were skillful physicians, active in our society, and in a marked degree held the confidence and esteem of their respective communities.

ROCKINGHAM COUNTY.

WALTER TUTTLE, SECRETARY.

The fourth annual meeting of the Rockingham County Medical Society was held at Portsmouth November 12, 1908.

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Officers for the ensuing year:

President—A. W. Mitchell, Epping.
Vice-President—W. O. Junkins, Portsmouth.
Secretary—Walter Tuttle, Exeter.
Treasurer—A. M. Chesley, Exeter.
Delegates—Two years, G. H. Guptill, Raymond; one year, J. W. Parsons, Portsmouth.
Censors—Three years, F. S. Towle, Portsmouth; two years, W. H. Nute, Exeter; one year, C. A. Morse, Newmarket.

The following program was presented:

PROGRAM.

President's Address, "Mystic Medicine."
J. J. Berry, Portsmouth.

"The Treatment of Small Wounds."
P. B. Stevens, Exeter.

Discussion opened by W. B. Kenniston, Exeter.

"An Analysis of Thirty Cases of Diphtheria."
H. L. Taylor, Portsmouth.

Discussion opened by J. J. Berry, Portsmouth.

"Treatment of Empyema."
E. E. Lake, Hampstead.

Discussion opened by G. H. Guptill, Raymond.

Three new members were taken in.
Dinner was served at 1 p. m.
Adjourned at 4.30 p. m.

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Obituaries.

JAMES FRANK BROWN, M. D.

Dr. James F. Brown died at his home, 681 Union street, at 6:30 o'clock Wednesday morning, July 29, 1908, at the age of 69 years, 10 months and 23 days. The cause of death was anemia, and the doctor's last illness was of several months' duration.

Dr. James Frank Brown, who was next to the oldest active practitioner of medicine in Manchester, was born in Auburn in the old homestead just beyond Deer Neck bridge, Sept. 6, 1838. His parents both died while he was a child, and he was brought up by his uncle and aunt, John and Mary Brown of Candia.

He was prepared for college at Atkinson and Pinkerton academies, and entered the Dartmouth Medical college in 1861, and was graduated from that institution in 1864. In the meantime he was obliged to face a situation which left an impression upon his whole later life. He was suddenly called upon to go to Virginia, where his old friend, Sergt. James Scribner of the Army of the Potomac, lay dying, and bring him back home if possible. After tedious delays in Washington, at last he arrived at the camp only to find the soldier almost gone, and all that was left for him was to bring the body home the next day.

Dr. Brown returned to Hanover, but after a few days he was attacked with a terrible case of confluent smallpox. He was quarantined in the old medical school building and was attended by his preceptor, the celebrated Dr. Dixi Crosby. He was nursed with the most devoted care by Mrs. Daniel Scribner, whose daughter, Abbie

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Scribner of Raymond, he married in 1865, and who died in 1903.

Dr. Brown practised medicine in Chester, after graduation, for twenty years, and his practice increased to such an extent that it covered a large portion of Rockingham county. It is said that in all that period he never refused a call to visit the sick, no matter how deep the snow was nor how unfavorable every other condition was.

He removed to Manchester in 1884, and had continued the practice of medicine here up to the day when he took his bed in his final illness. He occupied the some office in Towne block for about twenty years, in which for the last eleven years his son, Dr. James S. Brown, has been associated with him. He was a man of wide experience and of a positive and somewhat unusual personality, and he was known to a very large number of people, both professionally and socially. Travel appealed to him, especially because of the mental inspiration which contact with new countries and strange people always affords. He had visited the Pacific coast and Europe, and in 1903 encircled the globe.

In 1863 he joined the Congregational church of Candia and in 1865 was transferred to the church in Chester, and upon removing to Manchester in 1884, he joined the Franklin Street church. He was always a constant supporter of the church and a constant attendant whenever his professional duties would allow. He was a member of St. Mark's lodge, No. 44, A. F. and A. M., of Derry.

Dr. Brown had extensive real estate interests. He was a trustee of the Merrimack River Savings bank for many years.

In 1904, his wife having died the previous year, he married Mrs. Marinda B. Martin, widow of Alfred T. Martin of Hooksett.

He is survived by his wife and two children, Dr. James S. Brown and Elizabeth S. Brown.

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FREDERIC RUSSELL CUMMINGS, M. D.

To his many friends the death of Dr. Cummings, on August 8, 1908, came with great suddenness. He was ill but a few weeks, stricken with a disease that is almost invariably fatal, endocarditis.

Dr. Cummings was born in Concord, June 16, 1873, spending his early life there, and graduating from the high school in 1893.

After a thorough fitting at Dartmouth college and at the Harvard Medical school, he continued his studies as a house physician in the Boston City hospital, at the conclusion of which service he was appointed admitting physician to the hospital, a most responsible position. After two years in this institution, he was appointed house physician of the Boston Lying-in hospital, and at the end of his service returned to Concord, where he engaged in general practice. He was very successful, and gained, best of all, the respect and confidence of the citizens.

He was one of the assistant staff of the Margaret Pillsbury General hospital, attending physician at the Orphan's Home in Millville, and assistant physician at St. Paul's school.

Dr. Cummings was married June 7, 1905, to Miss Helen Boss, of Williamantic, Conn., who, with little Carolyn, survives him.

The deepest sympathy of the whole community went out to the bereaved wife and daughter, and to Madam Cummings, the aged mother, in the loss of another and her only remaining son.

Dr. Cummings' death has left a place in Concord's life that will be hard to fill. Modest and unassuming to the last degree, he had achieved success as a physician unusual for one of his years. Among his associates in the medical profession, no one among the younger physicians of the city was more highly esteemed. In the many Concord

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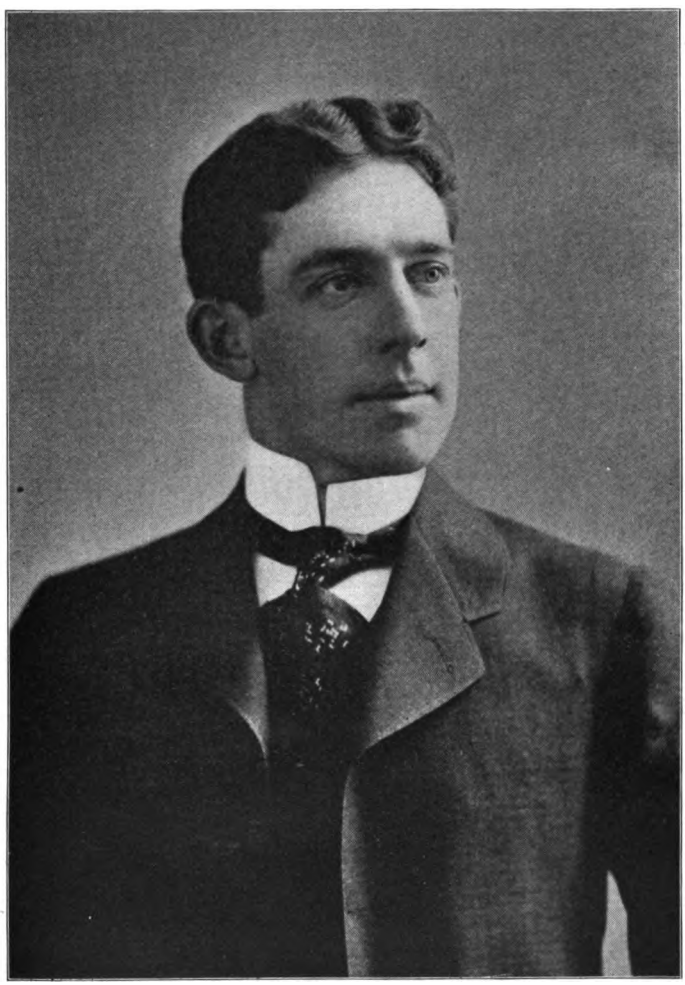

FREDERIC RUSSELL CUMMINGS, M. D.

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homes where he had brought courage and sympathy in time of sickness and trouble, his kindly words and faithful, conscientious service will be sadly missed. Among the friends of his boyhood and youth, of his college days, and of his manhood, his ever cheerful and sunny disposition, his ready sympathy, his generous and absolute sincerity will always remain as a precious memory.

Life apparently had much in store for him. Supremely happy in his home life, esteemed in his profession, and loved to an unusual degree by his friends, the years that were ahead of him seemed fair and bright with every promise. But it was not to be so, and One wiser and more far-seeing than we called him, and calmly and bravely as he had lived he answered the call.

It is hard for those who have loved him to realize that he has gone. But the world, where he touched it, is the better for his life,—more sincere, more honest, more genuine. And there will remain to those who have loved him, the remembrance of his faithfulness, his painstaking, conscientious service, his kindly nature, and his genuine, wholesome manliness.

DUTY WELL DONE.

The following minute has been entered upon the records of the staff of the Margaret Pillsbury hospital:

Once more within the short space of six months we are gathered together around the open grave of one of our beloved associates to tenderly pay the tribute of our love and devotion. A break in the ties that bind men together in a common cause is always sad, but particularly so when it happens to a band of physicians intimately associated on a hospital staff.

Frederic Russell Cummings in life acted well his part and in death has left happy memories of duty well done. A learned and scientific man, imbued with the true spirit

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of investigation for the sake of knowledge and recognizing the divine power of the Great Physicion in all things, he stood forth a fine type of the honorable physician and the Christian gentleman. Fortunate was the home into which he entered as friend and counselor, carrying with him hope, inspiration and comfort to the entire family. Modest in demeanor, gentle in action, faithful in duty, expert and reliant at all times, his sudden death in the full promise of high professional attainments is a distinct loss to his native city. We who knew him best will miss him most.

MANLEY W. WORK, M. D.

The community was greatly grieved and shocked to learn of the death of Dr. Manley Work, a former resident and popular physician of Antrim, at Manchester Aug. 20, 1908 after a very short illness. Dr. Work was born in Carmel, Me., August 13, 1863, graduated from Dartmouth Medical School in the class of 1899. He was a self-made man, working hard and unceasingly to obtain a medical education. He was greatly assisted in this work by his most estimable wife, by whom he is survived, also one son, William E. Work, and one sister, Mrs. Frank Alexander, of Peterborough. The funeral was held in Congregational church, Antrim, Sunday afternoon, Rev. A. M. Markey, of Antrim Methodist church officiating. The burial was at Evergreen cemetery, where the fine and impressive burial service of the I. O. O. F. was conducted by Waverley Lodge of Antrim, of which the deceased was a member. The many and beautiful floral tributes mutely testified to the high esteem in which Dr. Work was held by his many friends. The family have the deepest sympathy of all.

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GILLIS STARK, M. D.

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GILLIS STARK, M. D.

Dr. Gillis Stark, one of the most favorably known physicians of Manchester, died very suddenly, Dec. 13, 1908.

For several years Dr. Stark had not been in good health, and only a few days previous to his death told his brother, Fred R. Stark, that he knew he was not destined for a long life; there appeared to be no likelihood of his immediate death, however.

In the morning Dr. Stark arose about 5 o'clock and when he returned to his room he complained of not feeling well. Mrs. Stark saw that his condition was serious, and after helping him to his bed summoned a physician. He did not regain consciousness, and died at 8 o'clock, Mrs. Stark, her brother, Will Hall of Worcester, Mass., and Dr. Herman Christophe being at his bedside.

Dr. Stark was born in Manchester, Feb. 9, 1865, and was the son of Frederick G. and Anna B. (Hutchinson) Stark. He was a great-great-grandson of Maj. Gen. John Stark. With the class of '83 he was graduated from the high school, and then went to Dartmouth college, where he studied first in the classical department and then in the medical school, receiving his degree of M. D. June 27, 1889.

After graduation he went to Rockland, Mass., where he engaged in practice, afterward moving to Northwood in this state, where he remained a little over a year and then returned to his native city. In the years of his practice here Dr. Stark gained for himself an enviable place among the physicians of the city. He was one of the most popular young residents of West Manchester, and the confidence which the people of that section of the city had in him was shown by his election as alderman from ward 8, he being on the Democratic ticket. This was in the fall of 1896, and two years after he was re-elected. While in of-

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fice he was active in furthering the welfare of the city and served on several important committees.

In his college days Dr. Stark was a noted baseball player, being at one time the star pitcher for the Dartmouth team. In later years he took an interest though not an active part in athletics. He was one of the most popular young men in town, not only with his college associates but with all who knew him, and his death brings to many the loss of a close friend.

Dr. Stark was an Odd Fellow, a Knight of Pythias, a Knight of the Ancient Essenic Order and a member of the Foresters of America.

In April, 1893, Dr. Stark was married to Gertrude M. Hall of Windham, Me., who survives him. The other immediate relatives surviving are his father, Frederick G. Stark of West Manchester, two brothers, Fred R. Stark of Manchester and Dr. Maurice Stark of Goffstown, and one sister, Mrs. Charles F. Smythe of Manchester.

EDWARD M. TUCKER, M. D.

Dr. Edward M. Tucker, well known among the leading physicians and surgeons of Grafton county, and endeared by a brief residence to a host of friends in Derry, died Dec. 8, 1908, at his residence on Nesmith street.

The funeral services were held at the home Wednesday afternoon at 3 o'clock, conducted by the Rev. Charles L. Merriam of the Central Congregational church, after which the body was taken to Canaan on Thursday, where another service was conducted in the church by the Rev. Mr. Merriam and the Rev. C. L. Corliss at 1 o'clock in the afternoon.

Dr. Tucker was born in Springvale, Me., April 22, 1840, his father and mother being John and Eliza (Hussey) Tucker. Moving to Dover in his infancy he attended the

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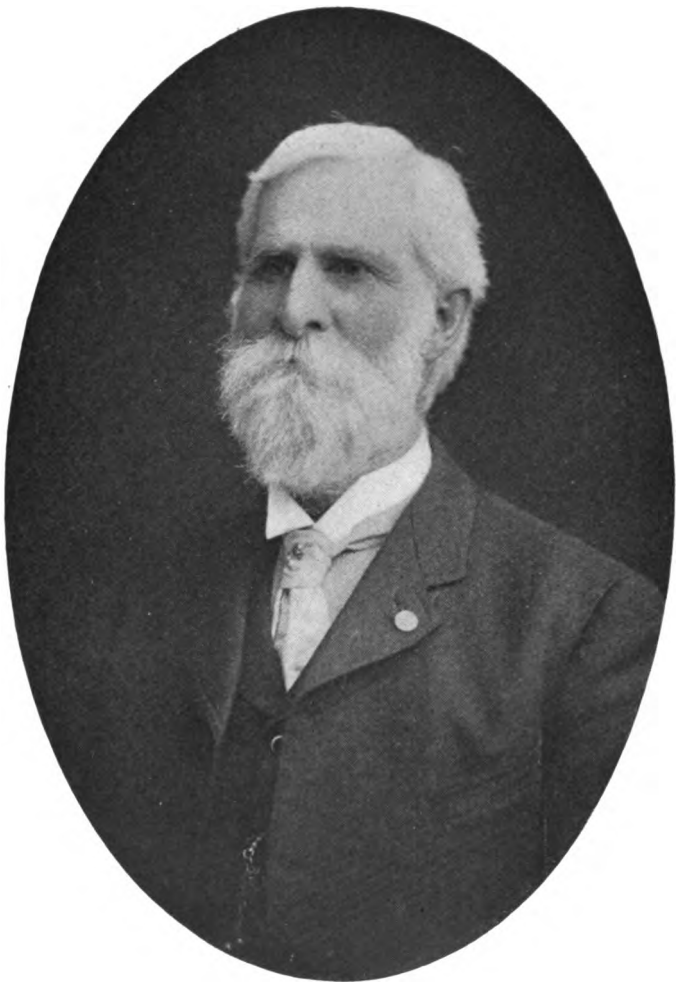

EDWARD M. TUCKER, M. D.

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schools of that town in his youth, and later became a student under Dr. L. G. Hill of Dover, until the outbreak of the Civil war. The call to arms in 1861 found him eager to enlist, and he became a member of Battery C, Third Massachusetts Light artillery. Brave and resolute as a soldier he was engaged in several severe battles, being wounded in a sharp fight at Shepherdstown, Va., Sept. 20, 1862. Taken to the hospital at Philadelphia he was discharged from the service, after a practical recovery, for disability. When fully restored to health and strength Dr. Tucker loyally determined to stand by the colors, passed examinations of the surgeons, and reinlisted in 1864. He was assigned to the Twenty-fourth Veterans' Reserve corps, being appointed hospital steward, and served in that capacity until 1865.

In December, 1865, he was appointed by Gen. U. S. Grant hospital steward in the regular army, and held that position until December, 1871, taking during that time two courses of lectures at the Medical University of Georgetown, D. C.

He became a student in the school of medicine at Bowdoin college, graduating from the same in July, 1872.

He decided upon Canaan, in this state, as a good place in which to begin his life work. He was impelled to this decision by the healthfulness of the climate, and by the extraordinary charm and beauty of the scenery in and about Canaan. His long, varied and valuable experience in the army, his thorough training in two prominent medical institutions, and his sterling manhood, made him better qualified for his chosen profession than the average physician and surgeon. In a short time his skill, his fine social qualities, his indomitable industry, and his rare faithfulness, won the hearts of the people. He quickly built up an extensive practice, responding to calls from the people for miles in all directions.

Much of Dr. Tucker's professional success and health

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he attributed to the fact that he never used liquor or tobacco. He was an influential and leading member of the Sons of Temperance, and gave himself with unsparing devotion to the advancement of the cause. Every good work had Dr. Tucker's sympathy and energetic backing.

He was thoroughly alive and alert as a citizen. Everything that made for the welfare of the town, the church, the school, the benevolent organizations and lodges, had his hearty support. He was a true patriot and genuinely devoted to his God, his home and his native land. He was a member of the school board, the board of health, and a justice of the peace for many years. He had been a member of the Knights of Pythias for more than thirty years, of the Helping Hand lodge, Independent Order of Odd Fellows, and of Admiral Faragut post, No. 52, G. A. R. of Enfield.

He was also past medical director of the department of New Hampshire, G. A. R., and a member of the society of the Sons of the Revolution, and of both the New Hampshire and White River Medical societies.

Dr. Tucker was a versatile man, large-hearted and of generous impulses. He married Mary Albina Kimball of Grafton in February, 1879.

Following the death of his wife Dr. Tucker and his daughter, Luie Albina Tucker moved to Derry in October 1907, taking up their residence in what is known as the David Palmer place on Nesmith street.

MILTON S. WOODMAN, M. D.

Dr. Milton Sawyer Woodman, one of the best known physicians and surgeons in the state, died at his home, Feb. 27, 1909.

He had been ill for three weeks and his death was not unexpected. He was born in Hatley, P. Q., June 4, 1850, and was the son of Albert A., and Mary J. Woodman, being

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Milton S. Woodman, M. D.

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the eldest of four children. When a small boy his parents removed to Compton, P. Q. He lived there, attending the common school and the academy in the vicinity until 17 years of age, when he entered the seminary at Waterbury Center, Vt., where he graduated in 1871. After that he spent some time in Bishop's college, Lenoxville, P. Q., and in Bates college, Lewiston, Me.; later he taught the high school in Danville, P. Q. In 1875 he married Mary Emma Morey of West Lebanon.

After teaching school one year in Essex Institute, Vt., he moved to West Lebanon where he entered the drug business under the firm name of Drake & Woodman. He continued in the business until several years after his graduation from the Dartmouth Medical college in 1888. From that time to the present he practised medicine in West Lebanon. In 1903 he took a post-graduate course in McGill University.

In town affairs he was an ardent Republican, being active in all the recent political campaigns. He has served the town on the school board and was a member of the board of health.

He was instrumental in building the new schoolhouse and public library, was sent to the general court in '90, and was supervisor of the check list for many years. He was a member of the White River and the Grafton county medical societies, the New Hampshire Surgical club, the American Medical society, the New Hampshire Medical society and Railway Surgeon's club. He was railway surgeon for the Concord division of the Boston and Maine. He was a charter member and first president of the A. K. K. medical fraternity which has since become a national body.

He was a member of Franklin lodge, A. F. and A. M., St. Andrews chapter, R. A. M., Sullivan commandery, K. T., and a Shriner.

He is survived by his wife, Mary E. Woodman, one

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daughter, Mrs. Mary Woodman Kingston of Springfield, Mass., a son, Dr. James Brown Woodman of Franklin, two sisters and one brother.

HENRY A. WEYMOUTH, M. D.

Henry Augustus Weymouth, son of Daniel and Honor (Hall) Weymouth, grandson of George Weymouth, was born October 14, 1820, at Gilmanton, New Hampshire. He died in Andover, New Hampshire, October 22, 1908. His preliminary education was obtained in the common schools and academies of Gilford and Gilmanton; began to read medicine with Naham Wight, M. D., Ex-President N. H. Medical Society; attended one course of lectures at Dartmouth Medical School, and two courses at the Vermont Medical College, Woodstock, receiving the degree of M. D. from the last named in June, 1843. He located in Andover, New Hampshire, September 4, 1843, and has continually resided and practised his profession in that town. He was a member of the Centre District Medical Society and its President for two years, New Hampshire Medical Society, and of the American Medical Association. He was also a member of the Masonic fraternity. He received an honorary degree of M. D. from the Dartmouth Medical School in 1870. His life was an active one, and, in the many years of his practice as a physician, he rarely took a vacation. He was never known to ask a man pay for his professional services, and never refused a professional call when he was physically able to make it. He was interested in public affairs, having been moderator of his town for fifty-five consecutive meetings; was a representative to the Legislature, and a member of the school board of Andover several different years. January 1, 1844, he married Miss Louisa, daughter of Bayley Young of Gilmanton, who died several years ago. Their children were, Hattie E., Daniel

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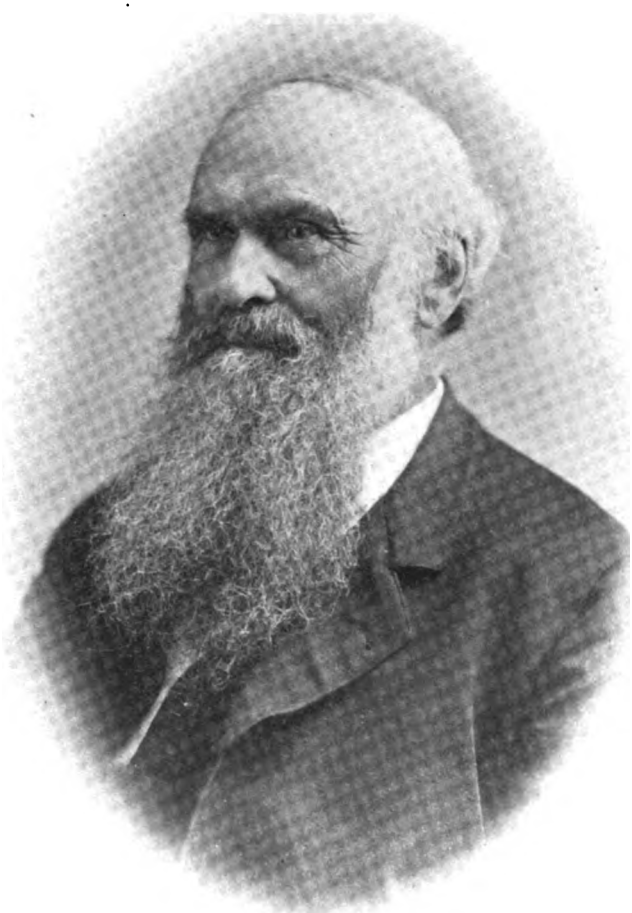

HENRY A. WEYMOUTH, M. D.

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B., and George W.; the latter was graduated from Dartmouth Medical School in 1881, and now resides in Lyme, New Hampshire. At the time of the decease of the subject of this sketch, a writer said of him: "It is conceded, that this community which has been prolific of men in many crafts and professions, was never prouder of one of its citizens than of good old Doctor Weymouth, and there was profound sorrow on all sides when his death was announced."

JAMES SCRIBNER BROWN, M. D.

After suffering but a short time with pneumonia, Dr. James Scribner Brown, one of Manchester's prominent physicians, and one of the leading surgeons of the state, died at the Sacred Heart hospital at the age of 37 years. His death was an inexpressible shock to a great many friends.

For several weeks Dr. Brown had been "running down," as he stated it to friends, and inside of a week, when warned that he should do something for himself, he replied that he thought he could fight off the attack of what he termed a severe cold. February 17, however, he became so weak that he was taken to the Sacred Heart hospital, and his decline from that moment was rapid. His condition became so serious that his attending physician called in Dr. Gannett of the Massachusetts General hospital, for purposes of consultation, and it was seen that the case was nearly hopeless. Sunday the crisis of the disease made its appearance, and the doctor's condition was regarded as critical, though not entirely hopeless; that night he fell asleep, and appeared to be somewhat refreshed, but next day he sank rapidly, becoming unconscious, and his death came early in the afternoon.

The doctor had been out attending to his duties—the

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duties which pertain to a very large practice—only a few days, comparatively, up to the time of the announcement of his death, and the news of his untimely death was hardly believable.

Dr. Brown was born in Chester, Nov. 30, 1871, his parents being the late Dr. James F. and Abbie (Scribner) Brown. He came to Manchester when about a dozen years old and attended the city schools. He was graduated from the Manchester high school, in 1887, and then entered Dartmouth college. He was graduated from that institution in 1892. Following his graduation, he taught school for a year in Wilton.

It was then that he conceived the idea that he should like to study the profession of medicine, and he entered the Dartmouth Medical school, where he remained about a year, then going to the University of Pennsylvania, where he pursued the usual course in the medical department of that institution. He was graduated from the University of Pennsylvania in June, 1896. He then entered the Alleghany General hospital, and served a term as the house surgeon. Following his education in the Pennsylvania institutions, Dr. Brown came back to Manchester and settled there.

After being in practice in Manchester two years, he became a member of the surgical staff of the Sacred Heart hospital, a position he filled eminently well. He was a member of the Manchester Medical society, and at one time its president, and was also a member of the county and state associations, and was an honorary member of the Centre District Medical association of Concord. He was also a member of the American Medical society. Before the Manchester and Concord societies he had read many papers of great helpfulness to the members of his profession.

While pursuing his studies at Hanover, Dr. Brown was greatly interested in the literary work peculiar to Dart-

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mouth, and was an active member of the Ægis board. Also after his graduation from the University of Pennsylvania, he had taken a course in medical jurisprudence, in which science he was proficient to a high degree. In 1895, Dr. Brown received the degree of A. M. from Dartmouth for the highest honors in chemistry.

Dr. Brown was a member of the Masonic fraternity, and of the Patrons of Husbandry. He is survived by one sister, Miss Elizabeth S. Brown. Dr. Brown was unmarried.

Regarding Dr. Brown's proficiency and skill as a physician there was absolutely no question. It is difficult for a layman to form any estimate of a man in any profession in which it takes many years of hard study and much experience to gain a qualification, but a leading Manchester physician said, and offered no obstacle to the publication of the statement, the following:

"Undoubtedly Dr. Brown was one of the leading surgeons of Manchester, and I should say of the state. He was accurate in his diagnosis, rapid and extremely skillful in his work, gentle in all of his ministrations, and as finely poised in his medical knowledge as any physician I have ever met. Perhaps Dr. Brown operated in over 200 cases of appendicitis in this locality, and was highly successful. He performed the first successful Cæsarean operation in Manchester, and I think in the state. I do not think any doctor living ever heard Dr. Brown say an evil word of any brother physician, or of any man for that matter. His loss to New Hampshire medical circles is incalculable."

Outside of his medical profession, also, Dr. Brown had a great many friends, who recognized his genius and who had every respect for his opinions. He was of a distinctively happy disposition, and there were fewer men in Manchester who were better read in the matters of literature. He had a peculiarly alert memory, and what he read in his college days, or since, held firmly in his mind.

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There seldom was a question brought up in literature, among his intimate friends, that he did not discuss with quick intelligence, and his knowledge of books—the good literature of the day—was nearly boundless.

It is related that he was at the bedside of a patient not long ago, the sick man being convalescent. When the doctor came in, and asked the patient how he felt, the sick man replied that he felt so well that he had begun to resume his study of Herodotus. Dr. Brown instantly fell into the spirit of the conversation, and his rapid measuring of the ancient traveler, and his concise deductions of what had happened since the time of Herodotus to prove the old traveler's correctness, were remarkable.

And so it was with any subject of conversation. Dr. Brown had always the right word, or the pleasant quip, or the encouraging smile, and, as all the world knows, it is this disposition that does a great deal more than medicine many times. So it was always a benediction to the sick person when this cheerful man stepped into the sick room.

With his fellow physicians Dr. Brown was all that goes to make up a helpful man. He was the truest sort of a friend, one who gained a confidence and held it, one who had everything to live for—a fine practice, an unusually large army of friends, enough of the world's goods so that he had no need to worry, and education and a wide experience that fitted him well for his profession. Yet in four days all these advantages have been brushed aside, and naught remains but the remembrance of this excessively cheerful and wonderfully skillful man, whose mission was to help the more unfortunate of mankind—whose smile and kindly words were medicine itself.

So it is that the death of Dr. Brown comes with a particularly crushing force. So it is that the memory of his companionship among his fellow physicians will remain always sweet and clean; and so it is, that those he had brought to better health will be glad that Dr. Brown

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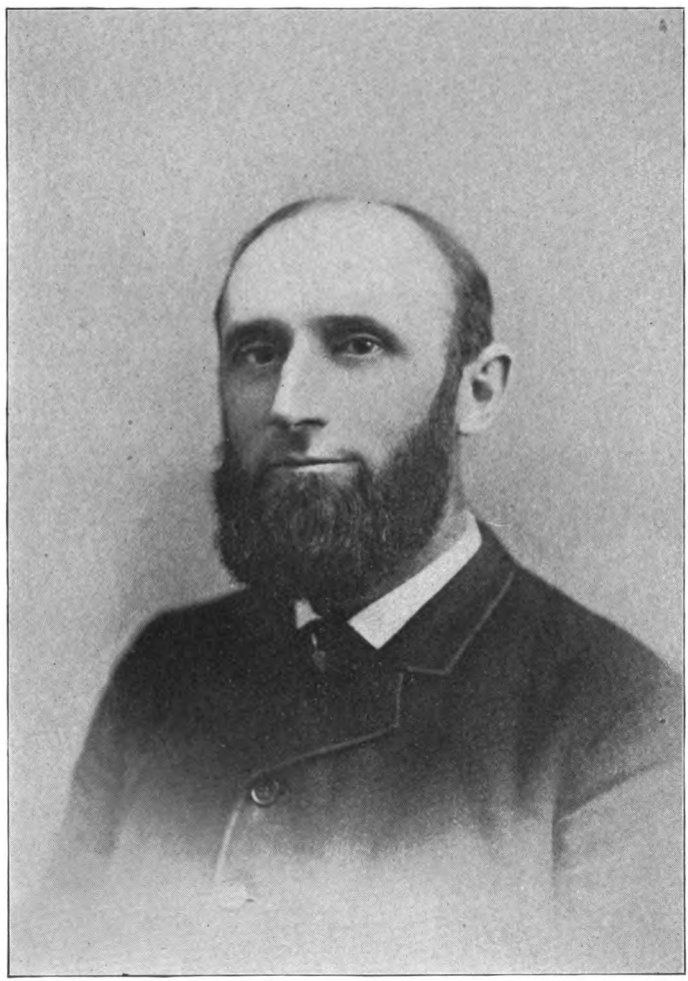

EZRA MITCHELL, M. D.

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had lived even the short thirty-seven years that marked the span of his life.

So it is, that there is mourning in several circles today, and the most poignant regret at the passing of this useful young life.

EZRA MITCHELL, M. D.

Dr. Ezra Mitchell died April 20, 1909, at his home on Pleasant street in Lancaster. His death robs the North Country of its most distinguished physician and surgeon and the profession of a practitioner who ranked with the most skilled in the state. The blow to the community, although his death was not unexpected, is severe, as for two score years he has practised among the families and won their love, affection and confidence. Although he had been in failing health for many years he had not until a short time before his death entirely abandoned his practice, answering all calls whenever possible, so devoted was he to his profession.

Dr. Mitchell held to a remarkable degree the confidence of both brother physicians and patients. By both he was recognized as a physician of superior worth, whose opinions represented years of study and a vast knowledge gained by experience. Practically his entire life was devoted to medicine. A state sanatorium for consumptives may properly stand as a monument to the distinguished physician.

Dr. Mitchell was unostentatious and his most intimate friends were fellow physicians. He has, however, received about every honor which could have been conferred upon him by the medical profession of the state and faithfully performed all duties thus imposed upon him.

Ezra Mitchell, only son of Ezra and Mary (Perry) Mitchell, was born in Minot, Me., Nov. 12, 1841. After graduating from the Maine State seminary, Lewiston (now

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Bates college), he entered the Harvard Medical school, from which he withdrew at the breaking out of the Civil war and enlisted as a private in the Eighth regiment, Maine Volunteer infantry. He was, however, appointed a medical cadet in the United States army, and he served as such until mustered out in November, 1865, on account of a serious pulmonary affection which threatened to cut short his career of usefulness. Firmly believing that he would ultimately recover he became a medical student at Dartmouth college, from which he was graduated in 1867. The successful handling of his own case prompted him to become a specialist in tuberculosis and kindred diseases which he did and attained a distinct success along that line of work. He did not, however, confine his practice to this specialty, but made a substantial success as a general physician and surgeon, and ranked among the most able medical practitioners in the state.

In 1903, Dr. Mitchell was elected to the lower branch of the state legislature, solely for the purpose of assisting in the passing of an act appropriating a large sum for the building of a state sanatorium for consumptives and the bill passed both houses without opposition, but was vetoed by Governor Bachelder. Reëlected in 1905, he renewed his efforts in behalf of the sanatorium bill with increased vigor and once more secured its passage in the lower house. This time the act was opposed in the senate, but a compromise in which the Balch estate figured prominently was finally effected stipulating that the bill become a law May 1, 1907. Having thus accomplished his purpose he retired from politics. He was appointed chairman of the board of trustees to locate and build the sanatorium. Glencliff was decided upon as the location and it has been completed and is soon to be opened.

Dr. Mitchell was a member of the Coös county, New Hampshire and the National Medical societies and the Masonic order. From 1882 to 1885 he served as surgeon-

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HENRY A. HILDRETH, M. D.

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general of the state militia and attended as a delegate the dedication of the national monument at Yorktown.

He was president of the Lancaster Savings bank and president of the Lancaster Trust company. In his religious faith he was an Episcopalian and he was junior warden of St. Paul's church.

Dr. Mitchell married Abbie E. Potter in 1867, who bore him three children, but one of whom, Ernest H., is living. Mrs. Mitchell died several years ago.

HENRY A. HILDRETH, M. D.

Dr. Henry A. Hildreth of Bethlehem died at the home of his son, Dr. George K. Hildreth, New York City, March 25, 1909, having gone there for his health early in the year. The body was taken to his residence in Bethlehem for burial. Dr. Hildreth was one of the best known physicians in New Hampshire. His practice was continued over a period of thirty years in the North country, where he had a reputation for skill and sagacity and the high regard of his professional brethren.

He was born July 13, 1850, and was the son of Chauncey and Keziah Hildreth. His medical career began with his graduation from the New England college, which was followed by a year of study abroad. Thus equipped, he settled in Lisbon, where he remained four years, then locating in Bethlehem, where he had since lived.

Dr. Hildreth was twice married. His first wife was Lilla A. Kelsea of Lisbon, the marriage having taken place Feb. 21, 1877. Three children were born, Charles H. Hildreth, who died when a young lad, George K. Hildreth, now a practising physician in New York city, and Miss Mary E. Hildreth. Dr. Hildreth's second wife was Miss Ellen Kimball of Haverhill.

The doctor had been a leading spirit in Masonic affairs

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in New Hampshire. He was a member of Kane lodge and of Franklin chapter, No. 5, of Lisbon, and of St. Gerard commandery of Littleton. He was a 32nd degree Mason and had been eminent commander. He had been at the head of Mount Eustis chapter, O. E. S., of Littleton, and a member of the American Arabic order of the Mystic Shrine of Montpelier, Vt.

He had been prominent in medical societies as member and presiding officer, the societies embracing the New Hampshire Medical society, the Massachusetts, the Boston District and the White Mountain Medical. He had held various offices in the town of Bethlehem.

Dr. Hildreth was a man of dignity and possessed many fine traits. He was loyal to duty, discharging the duties of those offices which he held with fidelity, and he had much executive ability which made him an important factor in promoting enterprises. He was a true and kindly friend and those who called him as a physician became greatly endeared to him, as friend and counselor. In the welfare of Bethlehem he was warmly interested and devoted time and effort to the promotion of the interests of his adopted town.

The survivors are a widow, one son, Dr. George K. Hildreth, of New York, and a daughter, Miss Mary Hildreth.

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List of Members of the New Hampshire Medical Society, 1909.

HILLSBOROUH COUNTY.

Name.	Residence.
Aldrich, E. B.	Manchester.
Allen, Bradford	Nashua.
Anthoine, I. G.	Nashua.
Atherton, E. B.	Nashua.
Bailey, G. S.	Hillsborough.
Baker, I. B.	Manchester.
Baker, Norman C.	Milford.
Bastian, G. L.	Manchester.
Bennett, H. W. N.	Manchester.
Black, J. S.	Nashua.
Blaisdell, Frank	Goffstown.
Boutwell, Henry T.	Manchester.
Boutwell, Henry W.	Manchester.
Brien, A. A.	Manchester.
*Brown, James S.	Manchester.
Brownrigg, A. E.	Nashua.
Bullock, Lillian	Manchester.
Burnam, Hosea B.	Manchester.
Carpenter, I. L.	Manchester.
Carvelle, H. DeW.	Manchester.
Cheever, N. F.	Greenfield.
Chirurg, Charles	Manchester.
Coburn, C. O.	Manchester.
Congdon, C. E.	Nashua.
Corliss, O. L.	Mt. Vernon.
Corning, P. W. I.	Manchester.

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Name.	Residence.
Crosby, W. T.	Manchester.
Curtiss, C. L.	Manchester.
Cutler, C. H.	Peterborough.
Davis, G. M.	Manchester.
Dearborn, S. S.	Nashua.
Dodge, C. M.	Manchester.
Finerty, J. W.	Milford.
Fiske, G. V.	Manchester.
Foster, G. S.	Manchester.
Fritz, Emdon	Manchester.
Gleason, J. H.	Manchester.
Greeley, G. H.	Merrimack.
Greeley, J. T.	Nashua.
Guerin, Moise	Manchester.
Guertin, Auguste	Nashua.
Guillet, N. E.	Manchester.
Hammond, C. B.	Nashua.
Harrington, C. W.	Peterborough.
Higgins, C. E.	Wilton.
Hinds, Wm. H. W., Jr.	Milford.
Holcombe, C. H.	Brookline.
Hutchinson, H. S.	Milford.
Jewell, H. H.	Nashua.
Jones, E. A.	Manchester.
Jones, F. W.	New Ipswich.
Kelso, W. L.	Hillsborough Bridge.
Kittredge, Frank	Nashua.
Lacasse, L. J.	Manchester.
Lafontaine, Gustave	Manchester.

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Name.	Residence.
Lanouette, J. E.	Manchester.
Larochelle, J. E.	Manchester.
Lavoie, Zenon	Manchester.
Locke, Eva M.	Nashua.
Lovejoy, F. H.	Milford.
Lyons, W. H.	Manchester.
Maynard, Oswald	Nashua.
Milliken, C. W.	Manchester.
McLaughlin, P. J.	Nashua.
Moran, B. G.	Nashua.
Morey, G. B.	Manchester.
Morse, H. M.	Peterborough.
Murray, J. T.	Manchester.
Mulvanity, A. F.	Nashua.
Musson, W. R.	Antrim.
Mygatt, H. E.	Nashua.
Nutter, C. F.	Nashua.
Ober, C. F.	Manchester.
O'Connor, J. C.	Manchester.
Parker, D. W.	Manchester.
Pattee, W. H.	Manchester.
Pease, B. D.	Greenville.
Petit, W. A.	Nashua.
Pettingill, J. B.	Amherst.
Proctor, J. H.	Milford.
Reed, W. E.	Nashua.
Robbins, E. D.	Nashua.
Robinson, J. F.	Manchester.
Rock, T. F.	Nashua.
Rogers, F. N.	Manchester.

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Name.	Residence.
Sasseville, N.	Manchester.
Shea, Augustus	Nashua.
Smith, H. L.	Nashua.
Smith, H. O.	Hudson Centre.
Stark, M. A.	Goffstown.
Stewartson, C. D.	Manchester.
Stickney, H. L.	Manchester.
Straw, A. G.	Manchester.
Straw, Z. L.	Manchester.
Sumner, A. F.	Manchester.
Sweeney, Mary	Nashua.
Swett, E. B.	Grasmere.
Sylvain, E. A.	Manchester.
Taylor, Joseph	Manchester.
Thompson, W. A.	Manchester.
Towne, G. D.	Manchester.
Tremblay, E. G.	Manchester.
Wallace, A. S.	Nashua.
Wallace, A. L.	Nashua.
Wallace, Ellen	Manchester.
Warner, F. C.	Antrim.
Wason, Eugene	Milford.
Watson, George	Manchester.
Watson, Maurice	Manchester.
Weaver, C. A.	New Boston.
Webber, N. B.	Manchester.
Weeks, W. R.	Manchester.
Wheat, A. F.	Manchester.
Wilkins, G. C.	Manchester.

MERRIMACK COUNTY.

Abbott, W. H.	Hillsborough.
Adams, Chancey	Concord.

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Name.	Residence.
Amsden, Harry H.	Concord.
Annable, E. G.	Concord.
Bakeman, F. A.	Franklin.
Bancroft, C. P.	Concord.
Beaton, A. A.	Franklin Falls.
Beauclerk, W. P.	Concord.
Bell, E. L.	Plymouth.
Blaisdell, G. C.	Contoocook.
Bugbee, M. L.	Concord.
Butterfield, C. E.	Suncook.
Carr, B. W.	Pittsfield.
Clark, E. A.	Concord.
Clarke, G. H.	Concord.
Cogswell, L. H.	Warner.
Cole, C. I.	Henniker.
Cook, C. H.	Concord.
Cook, George	Concord.
Coolidge, J. W.	Bristol.
Conn, G. P.	Concord.
*Cummings, Frederic R.	Concord.
Currier, D. M.	Newport.
Day, A. K.	Concord.
Dolloff, C. H.	Concord.
Douglass, O. B.	Concord.
Drake, E. T.	Franklin.
Duncan, Charles	Concord.
Eaton, Frank	East Weare.
Fernald, A. M.	Sutton.
Fontaine, H. T.	Pembroke.
Fowler, F. A.	Hill.
Gallinger, Ralph	Concord.

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Name.	Residence.
Goodhue, D. P.	West Springfield.
Grafton, F. W.	Concord.
Graves, E. E.	Penacook.
Graves, R. J.	Concord.
Griffin, N. L.	New London.
Haskell, P. T.	Concord.
Hill, E. E.	Suncook.
Hill, Roscoe	Epsom.
Hills, F. R.	Rutland, Mass.
Kimball, G. M.	Concord.
Knapp, Lee V.	Danbury.
Littlefield, A. M.	New London.
Littlewood, Thomas	Concord.
Macdonald, J. B.	Concord.
Megrath, W. A.	Loudon.
Mitchell, Ethel	Concord.
Mitchell, W. H.	Loudon.
Morrill, S. G.	Concord.
Munsey, G. F.	Suncook.
Quinn, C. H.	West Concord.
Rowe, W. C.	Andover.
Sanborn, G. H.	Henniker.
Sanders, L. A.	Concord.
Sargent, E. U.	Penacook.
Sargent, F. H.	Pittsfield.
Smith, W. E.	Franklin Falls.
Sprague, F. A.	Concord.
Staples, J. W.	Franklin Falls.
Stearns, H. C.	Concord.

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Name.	Residence.
Stevens, J. E. H.	Concord.
Stillings, F. A.	Concord.
Sullivan, D. E.	Concord.
Talbot, B. L.	Peterborough.
Tarbell, W. H.	Hopkinton.
Togus, T. M.	Hooksett.
Underwood, D. G.	Bradford.
Varick, W. R.	Concord.
Walker, C. R.	Concord.
Watson, I. A.	Concord.
*Weymouth, H. A.	Andover.
Whitcomb, C. S. F.	Contoocook.
Wilkins, Russell	Concord.
Woodman, J. B.	Franklin Falls.

ROCKINGHAM COUNTY.

Axtell, John F.	Newton.
Beaudette, Louis P.	Newmarket.
Berry, John J.	Portsmouth.
Buswell, A. C.	Epping.
Chesley, Alice M.	Exeter.
Colcord, Daniel W.	Seabrook.
Day, Herbert C.	Exeter.
Dearborn, Luther G., Jr.	Derry.
Eastman, Eugene B.	Portsmouth.
Fellows, George R.	Seabrook.
Fernald, Fred	Nottingham.
Foster, Avery M.	Candia.

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Name.	Residence.
Gravel, J. M. A.	West Derry.
Guptill, G. H.	Raymond.
Hannaford, C. W.	Portsmouth.
Heffinger, A. C.	Portsmouth.
Junkins, W. O.	Portsmouth.
Kenniston, W. B.	Exeter.
Knowlton, J. G. W.	Exeter.
Ladd, Samuel I.	Portsmouth.
Lake, Elmer E.	Hampstead.
Lance, A. J.	Portsmouth.
Landman, E. A.	Plaistow.
Lowe, E. W.	Fremont.
Luce, T. W.	Portsmouth.
McGlachlan, D. C.	Greenland.
Mitchell, A. W.	Epping.
Morse, Charles A.	Newmarket.
Neal, John H.	Portsmouth.
Nute, W. H.	Exeter.
Parsons, J. W.	Portsmouth.
Patterson, C. F.	Rye.
Pender, G. E.	Portsmouth.
Pitman, A. J.	Candia.
Reynolds, T. O.	Kingston.
Richardson, William	Londonderry.
Sherburn, A. B.	Portsmouth.
Sikorski, V. N.	Salem.
Smith, Marvin F.	Hampton.
Stevens, P. B.	Exeter.
Sweeney, H. L.	Kingston.

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Name.	Residence.
Taylor, H. L.	Portsmouth.
Thompson, E. H.	Hampton.
Towle, F. S.	Portsmouth.
Towle, G. H.	Newmarket.
Tuttle, Walter	Exeter.
Varney, A. H.	Exeter and Newfields.
Walker, W. D.	Portsmouth.
Wade, E. A.	Salem Depot.

CHESHIRE COUNTY.

Aldrich, W. H.	Marlborough.
Brown, H. L.	Hinsdale.
Brown, L. R.	Winchester.
Childs, A. H.	Dublin.
Cutler, G. I.	West Swanzey.
Craig, J. A.	Westmoreland.
Craig, W. P.	Walpole.
Dinsmoor, F. M.	Keene.
Dinsmoor, S. M.	Keene.
Dunham, W. R.	Keene.
Emerson, G. S.	Fitzwilliam.
Foss, G. H.	Hinsdale.
Faulkner, H. K.	Keene.
Gray, C. A.	Hinsdale.
Hildreth, L. G.	Marlborough.
Hill, G. C.	Keene.
Hopkins, A. W.	West Swanzey.

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Name.	Residence.
Hummiston, F. G.	Jaffrey.
Hyland, J. B.	Keene.
Lobdell, A. T.	Winchester.
Loveland, I. A.	Gilsum.
Mousley, B. T.	Alstead.
Oliver, R. F.	Alstead.
Osterhout, J. J.	Marlow.
Pierce, G. W.	Winchester.
Platts, H. S.	Troy.
Pratte, A. A.	Waterbury, Conn.
Proctor, J. D.	Keene.
Prouty, I. J.	Keene.
Robb, W. M.	Keene.
Roberts, J. S.	Hinsdale.
Stone, M. T.	Troy.
Sweeney, F. C.	Jaffrey.
Taft, Maud E.	Keene.
Thompson, J. M.	Walpole.
Tracey, E. A.	Keene.
Walker, C. S.	Keene.
Weston, A. F.	Keene.
Worcester, F. D.	Keene.

BELKNAP COUNTY.

Abbott, C. S.	Laconia.
Abbott, A. W.	Laconia.
Beckford, H. S.	Belmont.

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Name.	Residence.
Cooke, T. B.	Laconia.
Dolloff, A. S.	New Hampton.
Eaton, F. B.	Laconia.
Harriman, A. H.	Laconia.
Hawkins, F. L.	Meredith.
Hodgsdon, E. P.	Lakeport.
Houghton, E. T.	Tilton.
LaFrance, A. J.	Laconia.
Letourneau, J. N.	Laconia.
Little, C. S.	Laconia.
McMurphy, N. W.	Gilmanton.
Morrill, L. B.	Center Harbor.
Quimby, J. G.	Lakeport.
Saltmarsh, G. H.	Lakeport.
True, W. H.	Laconia.
Wright, E. R.	Alton.

STRAFFORD COUNTY.

Batchelder, E. C.	Dover.
Bates, J. H.	East Rochester.
Blanchard, R. C.	Dover.
Buckley, James J.	Milton.
Chesley, Harry O.	Dover.
Dougherty, T. J.	Somersworth.
Fairbanks, C. A.	Dover.
Flanders, L. W.	Dover.

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Name.	Residence.
Gilman, L. L.	Rochester.
Grant, A. E.	Durham.
Grant, L. E.	Somersworth.
Greeley, P. H.	Farmington.
Gross, C. W.	Milton Mills.
Ham, J. R.	Malabar, Florida.
Hart, M. A. H.	Milton.
Keay, F. L.	Rochester.
Keene, L. M.	Dover.
Lathrop, M. C.	Dover.
Morgan, G. P.	Dover.
Nason, Inez H.	Dover.
O'Doherty, J. D.	Dover.
Parker, H. R.	Dover.
Pattee, J. R.	Dover.
Richard, J. H.	Dover.
Richmond, A. P.	Dover.
Rogers, C. C.	Farmington.
Smith, A. N.	Dover.
Stokes, D. L.	Rochester.
Sullivan, M. B.	Dover.
Tolman, G. A.	Dover.
Weeks, Frank S.	Milton Mills.
Whitney, F. E.	Rochester.
Willis, J. L.	Eliot, Me.
Young, Stephen	Dover.

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CARROLL COUNTY.

Name.	Residence.
Andrews, E. B.	Ossipee.
Berry, U. R.	Melvin Village.
Bryar, F. E.	Whiteface.
Buzzell, C. P.	Conway.
Clow, F. E.	Wolfeboro.
Davis, W. S.	Sanbornville.
Getchell, S. P.	Wolfeboro.
Hoag, A. B.	Center Sandwich.
Hodsdon, E. W.	Centerville.
Horne, B. Frank	Conway.
Lord, L. W.	West Ossipee.
Lougee, G. W.	Freedom.
Scott, N. H.	Wolfeboro.
Shedd, G. H.	North Conway.
Shedd, J. Z.	North Conway.
Snow, Dryden	North Conway.
Tobey, F. C.	Wolfeboro.

COOS COUNTY.

Aldrich, Lewis C.	Jefferson.
Allin, F. A.	West Stewartstown.
Bowker, C. H.	Washington, D. C.
Brown, E. F.	Groveton.
Burnam, C. H.	Jefferson.
Cobb, J. J.	Berlin.
Cook, Edwin A.	Colebrook.

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Name.	Residence.
Evans, Frank W.	Coös.
Hight, C. E.	Groveton.
Jones, Edwin E.	Colebrook.
Lavallee, A.	Berlin.
Leith, W. H.	Lancaster.
Marble, Henry	Gorham.
Marcou, Louis B.	Berlin.
McGee, E. R. B.	Berlin.
*Mitchell, Ezra	Lancaster.
Morrison, G. H.	Whitefield.
O'Brion, Charles C.	Groveton.
Phipps, A. G.	Gorham.
Provost, A.	Berlin.
Pulsifer, T. C.	Berlin.
Twombly, E. E.	Colebrook.
Warden, John B.	Whitefield.
Webb, Rollin E.	Lancaster.
Wiggin, H. M.	Whitefield.
Wight, Edward M.	Gorham.
Wilder, Richard E.	Whitefield.

GRAFTON COUNTY.

Bartlett, Percy	Hanover.
Beattie, W. J.	Littleton.
Boynton, H. H.	Grafton.
Bowler, John W.	Hanover.
Burtt, E. B.	Woodstock.

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Name.	Residence.
Carleton, E. H.	Hanover.
Chase, Daniel R.	Lebanon.
Chase, E. C.	Plymouth.
Crossman, E. O.	Lisbon.
Downing, A. T.	Littleton.
DeGross, John H.	Bath.
Drew, J. A.	Rumney.
Eastman, O. D.	Woodsville.
Fowler, I. N.	Lebanon.
Fraser, S.	Wentworth.
Gerald, F. L.	Warren.
Gibson, C. R.	Woodsville.
Gile, J. M.	Hanover.
Graham, G. S.	Hanover.
Hazelton, G. W.	Haverhill.
*Hildreth, Henry A.	Bethlehem.
Huckins, J. C.	Ashland.
Johnson, H. L.	Franconia.
Kingsford, H. N.	Hanover.
Lawrence, W. E.	North Haverhill.
Leete, J. A.	Enfield.
Leith, Harry	Haverhill.
McGahan, C. F.	Bethlehem.
McGregor, G. W.	Littleton.
Miller, E. M.	Woodsville.
Page, J. M.	Littleton.
Russell, A. S.	Rumney.

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Name.	Residence.
Smith, F. A.	Lebanon.
Smith, W. T.	Hanover
Spear, F. E.	Lisbon.
Stetson, Harry W.	Orford.
Sneden, C. M.	Littleton.
Tobel, Frederic Von	Lebanon.
Vallee, J. E.	Lebanon.
Weaver, G. A.	Warren.
Wheeler, John	Plymouth.
*Woodman, Milton S.	West Lebanon.

MEMBERS NOT AFFILIATED.

†Allen, C. A.	Holyoke, Mass.
Allen, C. J.	38 Church Street, Winchester, Mass.
Allen, G. E.	Bradford, Mass.
Allen, W. A.	Hampstead.
Baketel, H. S.	57 Laight St. New York.
Barker, Ralph H.	Chester.
Bartlett, C. S.	Gardner, Mass.
Bean, J. W.	East Medford, Mass.
Blake, C. A.	West Brookville, Mass.
Bogardus, F. A.	Canaan.
Brigham, Frank E.	Salmon Falls.
*Brown, J. Frank	Manchester.
†Burnam, J. L.	Lascruces, Mex.
Burns, Robert	100 Valentine St. West Newton.
Carpenter, H. B.	Lancaster.
Charest, J. C. B.	Greenville.

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Cheney, J. M.	Ashland.
Claggett, F. P.	Newport.
Clark, W. E.	Lempster.
Cogswell, S. J.	West Derry.
Cogswell, J. R.	Warner.
Cotton, C. B.	Wolfeboro.
Currier, E. H.	Manchester.
Danforth, Mary	Manchester.
Davenport, G. E.	Bath.
Dean, E. E.	Lebanon.
Dearborn, D. S.	Milford.
Dearborn, Edmund G.	Acworth.
Dearborn, J. H.	83 Bridge St. Salem, Mass.
Denison, R. C.	Berlin.
Drake, C. B.	West Lebanon.
Dunbar, E. B.	Manchester.
Eastman, C. A.	Tottenville, Staten Island, New York.
Erskine, J. B.	Tilton.
Ferguson, S. T.	Nashua.
Fisher, E. C.	Sunapee.
Fisher, F. P.	Enfield Center.
Fitch, Emery M.	Claremont.
Flanders, C. F.	Manchester.
Flanders, M. E. M.	Hopkinton.
French, Edward	Harding, Mass.
French, L. M.	Manchester.
Frost, G. D.	Hanover.
Garland, W. R.	Plymouth.
George, A. P.	Haverhill.
George, C. F.	Goffstown.
Gibson, J. M.	McIndoes Falls, Vt.

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Gould, C. R. . . .	Tilton.
Gove, George S. . .	Whitefield.
Gray, George H. . .	26 Ocean St. Lynn, Mass.
Grimes, W. P. . . .	Hillsborough.
Hale, Wm. . . .	90 Washington St. Gloucester, Mass.
Hanaford, H. A. . .	Newport.
Hanson, C. W. . . .	Northwood Ridge.
Hatch, G. W. . . .	Wilton.
Hawley, G. H. . . .	Barnstead.
Hoitt, G. B. . . .	Manchester.
Holbrook, Guy . . .	295 Central St. Lowell, Mass.
Holbrook, Henry C. . .	Penacook.
Hazard, G. S. . . .	Hollis.
Hayes, John A. . . .	Somersworth.
Hodsdon, B. F. . . .	Manchester.
Huckins, T. H. . . .	Tilton.
Ingalls, G. H. . . .	Jamaica Plain, Mass.
Jarvis, Leonard . .	Claremont.
Johnston, C. E. . . .	Portsmouth.
Jones, F. P. . . .	Mill Village.
Jones, S. W. . . .	Franklin Falls.
Kean, M. E. . . .	Manchester.
†Kingsbury, C. F. . .	West Medfield, Mass.
Lachaine, Edmond . .	Hinsdale.
Ladd, E. E. . . .	Belmont.
Lamson, Charles A. . .	Elkins.

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Lavallee, A. M.	Suncook.
Leete, G. E.	Concord.
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Macleay, A. A.	Manchester.
Marden, A. S.	Newport.
McLaughlin, F. W.	Alton.
Merrill, J. F.	Warner.
Moody, H. A.	Sanbornville.
Newcomb, Vesley M.	Somersworth.
Newell, Harry W.	West Derry.
Nichols, C. B.	Los Angeles, Cal.
Otis, E. O.	Boston, Mass.
Palmer, Haven	Plymouth.
Perkins, F. B.	West Derry.
Perkins, Frederick	Manchester.
Pratt H. S.	Lancaster.
Pray, J. W.	Northwood.
Quackenbos, John D.	331 W. 28th, St. New York City.
†Roberts, S. W.	Wakefield.
†Sanborn, C. A.	Redlands, Cal.
Sanders, Henry C., Jr.	Claremont.
†Spaulding, F. W.	Clifton Springs, N. Y.
Sprague, E. G.	Barre, Vt.
Stackpole, H. H.	Dover.
*Stark, Gillis	Manchester.
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Steele, Minot A.	Portsmouth, R. I.
Sturtevant, C. B.	Manchester.

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Theriault, Joseph	Concord.
†Thurber, M. T.	95 Savin Hill Ave. Boston, Mass.
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Towle, G. H.	Deerfield.
Toye, J. E.	Charlestown.
*Tucker, E. M.	Derry.
Way, Osman B.	Claremont.
Wellner, Herman	4506 Champlain Ave. Chicago, Ill.
Weymouth, G. W.	Lyme.
Woodward, J. N.	Nashua.
Worthen, E. M.	Ashland.
*Work, Manly W.	Manchester.
Young, Oscar C.	Charlestown.
Young, Leander	Haverhill, Mass.

* Deceased. †Retired.

HONORARY MEMBERS.

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Billings, John S., M. D., New York.
Cheever, David W., M. D., Boston.
Child, William, M. D., Highland Springs, Va.
Coit, J. Milnor, Ph. D., Munich, Germany.
Cumston, Charles G., M. D., Boston.
Gay, George W., M. D., Boston.
Howard, Charles D., Ph. D., Concord.
Lamb, Frank W., M. D., Portland, Me.
Lund, F. B., M. D., Boston.
Richardson, Maurice H., M. D., Boston.
Williamson, W. D., Portland, Me.

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APPENDIX.

Charge of Judge Robert N. Chamberlin in the McBride Case.

Mr. Foreman and Gentlemen of the Jury:

The few principles of the law which it is necessary for you to understand in deciding this case are not very difficult to understand, and it will be my purpose to make myself plain in explaining them to you, and if at any time during the suggestions I am making to you, or after, while here, you are in doubt as to the meaning of any of them, it is your privilege to call the attention of the court to them.

The writ, in this case, you will have with you, but it is not evidence for or against either party. It shows the date of the writ, the beginning of the action; it also contains what is called in law a declaration, which is a legal statement of the plaintiff's cause of action, declared upon at the time of making the writ. And, as you know from the comment of the counsel and what has occurred here, you will have with you what is called an amended declaration, known as a declaration in trespass to the person. So the two causes of action are simply different statements, arising out of the same circumstances and facts which are before you in evidence, but legal principles differing somewhat apply to each of these declarations.

We will first, Mr. Foreman and gentlemen, consider the principles of law it is necessary for you to under-

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stand, which must be applied in determining the rights of the parties under the first count, or the declaration which is in the writ itself. This is known as a declaration in case, an action on the case for damages. It is not an action on a contract, although the declaration alleges facts, which, if proven, might imply a contract. Still the action is not for a breach of this contract, it is not for the defendants not doing what they agreed to do, or undertook to do, but for doing something which they undertook to do in a careless and negligent manner. This is the declaration in case. The plaintiff says, that the defendants carelessly and negligently cut off his arm when they should have simply set the bones and reduced the fracture.

The other amended declaration to which I have called your attention is trespass, as I have already stated, and that alleges that they willfully assaulted him—committed an assault upon him by cutting off his arm. This is in legal form, but it simply means that they wrongfully and unlawfully, without his consent, cut off his arm. This is the legal meaning and gist of this declaration. To these two declarations or causes of action, as stated in the writ and amendment, the defendants plead that they are not guilty, and that is in legal form simply saying that they are not responsible for any injury which befell the defendant; that they were not careless, and did nothing negligent, and that they are not responsible in law for any damage which he has sustained. Upon the issues raised by these legal pleadings, the plaintiff must go forward and establish his cause by legal proof. The fact that a patient does not recover from any surgical case, that only a partial recovery or a bad result is obtained, is not of itself alone legal evidence of negligence or unskillfulness, but in considering the evidence in the case relating to the care or the negligence of the defendants, you may consider the treatment given by the defendants with all other evidence bearing upon those questions. Negligence is not to be presumed, it must be proved because

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it is a question of fact. Whether a person is careful or negligent at a particular time, in a particular thing, or in particular circumstances, is ordinarily a question of fact and not of law. The facts in a given case being proved or admitted, whether they constitute a legal cause of action is a question of law; therefore, from the evidence alone, you must determine all questions of fact in this case, and having determined them you will, to the facts as you find them, apply the rules or principles of law given you.

With respect to the duties of physicians who are called to treat either fractured arms, broken legs, or any injuries or any ailments humanity is subjected to, certain legal rules must be applied, and I will now state them to you as briefly as possible:

When a physician or surgeon is called, or assumes to treat a patient, the relation created carries with it certain legal obligations and duties. The duties and responsibilities of all classes of persons engaged in a trade or profession, like lawyers, physicians, engineers, mechanics, machinists, builders, carpenters, or any other trade or profession requiring special skill or knowledge may be stated generally as follows:

They hold themselves out to the public as possessing that reasonable degree of learning, skill and experience which is ordinarily possessed by those engaged in the same business or profession, and which is ordinarily required by those conversant with that employment as necessary and sufficient to qualify them to engage in said business or profession. They not only must possess that reasonable degree of learning, skill and experience, but must use reasonable and ordinary care and diligence in the exercise of their skill and the application of their learning and experience to accomplish the purpose for which they are employed.

They do not contract that they possess or will undertake to use extraordinary care or diligence, or extraordinary and uncommon learning, skill or experience. The general

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rule is that they shall possess ordinary skill or experience of the average person engaged in that employment or profession, and that they will exercise such care and ability in the employment as men of common and ordinary care and prudence use in the same business in which they are engaged. They agree, and the law imposes upon them the obligation that they shall possess and use that degree of skill, learning and care that is possessed and exercised by the average person engaged in the same profession, and they cannot be held to any greater liability without an express contract. To charge physicians or surgeons for damages on account of unskillful or negligent treatment of his patient's case, it is never enough to show that he has not treated his patient in that mode or used those methods which in the opinion of others, or even medical men, the case requires, because such evidence tends to prove errors of judgment for which the defendants are not responsible, as much as the reasonable care and skill which they may be responsible for. The plaintiff must go further and prove that the defendants assumed the care and undertook to act as physicians or surgeons without the education, knowledge and skill which entitled them to act in that capacity. Or the plaintiff is bound to prove that having such knowledge and skill the physician or surgeon neglected to apply it with such care and diligence as in his judgment, properly exercised, the case must have appeared to require. In other words, that he neglected this proper treatment from ignorance or carelessness. This duty of using ordinary care does not make a physician an insurer of the health of his patients. Nor does it make him a guarantor for the patient's recovery. If he does in any particular case what men of ordinary prudence would have done under the same circumstances he is without fault or carelessness, whether the patient does or does not recover. The fact that the patient does not recover is no evidence of the physician's negligence or unskillfulness.

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You will note, Mr. Foreman and gentlemen, that in the remarks I have made to you I have used the terms "ordinary care," and "prudence," "negligence," "carelessness." These are all used in the same sense, and you doubtless understand their full significance and meaning. Care, what is ordinary care under certain circumstances, might be gross negligence under other and different circumstances, and so the converse of that is perfectly true, what is careless and negligent under some circumstances might be ordinary care under other circumstances. If one of you gentlemen were to remove a house, a brick house, in a field, you would have no hesitation in going to the house and taking the bricks one at a time and throwing them out into the field, but if that house were set near a sidewalk where people were passing and repassing, such conduct would be simply reckless and careless. Or if you were driving a quiet horse on country roads, you would drive along without much attention, but if you had a spirited, unbroken horse in the city, where people and all kinds of vehicles were, and everything likely to frighten the horse, you would and should use, in the exercise of ordinary care, very great caution in driving the animal.

If you were going into a man's sawmill you would need to take great care to avoid coming in contact with the machinery, while you might go into his barn and not use much care, and yet only be using the care of an ordinarily careful and prudent man in both cases. So when a man undertakes to perform operations, like operations which surgeons and physicians are called upon to perform, you can see that the importance of those operations to the lives and health of their patients requires great care, and ordinary care you will find under such circumstances may be the exercise of very great caution.

So when I have made the remark, what I have said here, that physicians and surgeons must use ordinary care, they must use the care and prudence of men engaged in that

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profession under the particular circumstances, and that is the measure which you will judge the work of these defendants by when you pass upon the question of whether they exercised care and prudence in what they did under the first cause of action, or declaration in the writ.

So, in this case, when the defendants were called upon and assumed to set this broken arm, or to treat it, the contract which they entered into, implied by law, or perhaps, to state it in another way, which means the same thing, the duty which the law imposed upon them was that they did possess learning, skill and experience of the average physician and surgeon engaged in the profession of surgeons and that they would exercise the care and diligence of men of average prudence engaged in their profession. If they did, and exercised the care of the average prudent surgeon in what they attempted to do and what they did do, under the consent of the plaintiff, under the first declaration, then they are not liable. If they were careless and did not exercise such care as men of ordinary prudence, possessing the learning, skill and ability that a man should possess who attempt to do such work, and in consequence of that neglect a wrong treatment was applied to this case and the plaintiff suffered damages, he is entitled to recover.

Now we will take up, if you please, Mr. Foreman, the other declaration, namely, the declaration in trespass. There are some principles of law which apply to this particular allegation which do not apply to the allegation which I have already been discussing, namely, the first declaration, which is attached to the writ. That is known as an action on the case. This declaration is a declaration in trespass. They arise out of the same facts and circumstances. The distinction, as nearly as I can state it to you without attempting to give it in all its bearings, but sufficient for this case, is this:

If one of you gentlemen were out here on a high hill beside the road and saw another driving along with a spir-

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ited horse, and you carelessly rolled a log or stone down the hill, and frightened the horse, the horse ran away and injured the driver, an action on the case alleging those facts would lie against you for damages for your careless act. If the same person standing there should run down to the side of the highway and strike the horse, or the person, and thus injure him, that would be a direct injury and trespass, and trespass would lie. One is an action for the consequences of careless acts, the other is an action for damages moving directly from wrongful acts.

It is alleged here in this declaration, as I have already suggested to you, in the ordinary forms in which the books give this form of action, that the defendants assaulted the plaintiff and cut off his arm. In a civil action (this is not a criminal action) in a civil action for a trespass of this kind of a person, no wrongful intent is necessary in order to constitute the offense. A trespass is committed if the act upon the person complained of was wrongful and unlawful. Every person has a right to complete immunity of his person from physical interference of others, and every unlawful or unauthorized touching of the person of another, except it be in the spirit of pleasantry, constitutes an assault and a trespass.

Now, calling your attention to the precise situation as it is conceded to be by all parties, the plaintiff had received an injury on the 29th day of last August, and in the course of events, as you find them, he is found in the care of Doctor Huckins and his associates, the other defendants in this case. It is contended on one side, the plaintiff's, that he never gave any consent to the amputation of his arm, that he expressly forbade it, and that he did not understand that he employed these people to cut off, to amputate his arm, and that he expressly forbade it. A patient must be the final arbiter as to whether he shall take his chances with an operation, or take his chances of living without an operation. Such is the natural right of the individual,

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which the law recognizes as a legal one. Consent, therefore, of an individual must be either expressly or impliedly given before a surgeon may have the right to operate upon his patient. But consent may be expressed or implied. Reasonable latitude must be allowed a physician in a particular case, and the law does not lay down any rule which would unreasonably interfere with the exercise of a physician's or surgeon's discretion or prevent him from taking such measures as his judgment dictates for the welfare of the patient in a case of emergency. If a person should be injured to the extent of rendering him unconscious, and his injuries were of such a nature as to require prompt surgical attention, a physician called to attend him would be justified in applying such medical or surgical treatment as might be necessary for the preservation of life or limb, and the consent of such injured person is, under such circumstances, implied. If, in the course of an operation to which a person has consented a physician has discovered conditions not anticipated before the operation was commenced, and which if not removed would endanger the life and health of the patient, he would, though no express consent was obtained or given, be justified in extending the operation to remove and overcome it, and the consent in such cases is regarded as implied.

These principles of law, Mr. Foreman, as I have already stated, apply to this count, or declaration, in trespass. So the question of fact is presented to you under this count whether or not the plaintiff consented to this operation, either expressly in so many words, or impliedly, by his language and conduct. This is a question of fact, and not of law, and one which you must determine, and determine solely from the evidence in the case, as you must determine all other facts in the case from the evidence.

The burden of the proof, Mr. Foreman and gentlemen, upon every element necessary and essential to maintain this right of action, as well as upon every element of damage

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upon which damages should be assessed, if damages are assessed, is upon the plaintiff. He must make it to appear a little more probable than otherwise, by a fair preponderance of the evidence that his contentions and claims are correct. If you are in doubt about it, and so much in doubt that you do not know what the fact is and are unable to determine it, or if you determine the fact in favor of the defendants, then your verdict should be for the defendants. If the plaintiff has convinced you by a fair preponderance of the evidence that his claims and contentions with respect to these matters that he has put in suit here are right, then he is entitled to a verdict. In determining these questions, as I have already said, you must determine them from the evidence. The evidence in the case consists of the statements of witnesses that have been introduced before you, and such other evidence, the arm and bones, and any other evidence that has been introduced, which I may or may not have in mind, the deposition of one witness, and your are to determine all of the facts in the case on this evidence. This means that you should very carefully weigh this evidence. The plaintiff and all the defendants, of course, are interested in the result of this action. If that interest which they have in this suit affects their credibility, you should detract so much as you think you ought from their evidence and give to the evidence of each only such weight as you think, under all the circumstances, it is entitled. You must consider the appearances of these witnesses, their candor, their seriousness, their intelligence, whether they exaggerate or attempt to conceal anything, in fact bring to it the same consideration that you would bring to the determination of any question of fact which you must determine from evidence and investigation. These suggestions apply equally to every witness that has testified before you. While the interest of the parties in the result of the suit is apparent and must be considered, it may be no greater or less apparently than the interest of other witnesses. If wit-

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nesses show partisan interest in the case, if they show undue anxiety or desire to bring about certain results, that may carry weight, and in considering and testifying they may unconsciously perhaps be carried on to state things in an exaggerated or in a partisan way, and all these things are for your consideration. A witness, some witnesses, are able, no matter what stress or interest may be upon them, to testify with absolute frankness, so that you would have no hesitation in believing all they say. Other witnesses, even though they have no direct interest in a suit, may have such partisan interest in one or the other of the parties as to be incapable of stating facts without stating them in a partisan way. So you will have to consider the appearance of the witnesses, and their statements, and the reasonableness of their stories and the reasonableness of the circumstances surrounding their stories, and whether they are contradicted by other witnesses or corroborated. You will have to consider all these matters when you consider what weight you will give to the testimony of any and every witness.

I ought to call your attention to one class of evidence here because it is a little out of the ordinary and differs from that which comes into cases that you are apt to be called upon to try, if you have had occasion to sit in cases before. I refer to the testimony of experts. It is true that men learned in the different professions are able to give opinions with respect to scientific facts that are of great help in determining facts in different cases. Such evidence is usually elicited by what are known as hypothetical questions, and hypothetical questions, as you understand, are simply, the attorney says to the physician or mechanic or lawyer, or anybody else who happens to be testifying as an expert, "Supposing certain facts to be true,"—and they will state the facts—I think I have had occasion to call your attention to such questions during the trial—"supposing such and such facts were true, what is your opinion as

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to what caused these conditions, or what would be the result of these conditions?" The opinion is given upon the facts as stated. Now whether those facts are true or not is for you to determine. The fact that the counsel assumes certain facts to be proved and true does not make them true. You are the sole judges of the facts and the sole judges of their weight, and of the facts that are proved thereby. So if you find in any of the hypothetical questions that have been stated some of the facts assumed are not true, and consequently the opinion is given on facts that are not true, you may think the opinion is entirely worthless and not give it any weight whatever, still if you find all the facts to be true as stated, and supported by the evidence, or enough to give opportunity for a substantially sound opinion then you will consider the opinion as evidence, and give to it such weight as you think it is entitled, and no more.

If you find that all of the elements necessary and essential to maintain this action are proved by the plaintiff in the way I have stated to you, by a fair preponderance of the evidence, then you will come to the question of damages. When you consider the question of damages, you must consider the condition of this man at the time he was placed in charge of or employed the physicians to treat him. Of course they are not responsible for the injury he received at that car. If that injury was such as to make that arm absolutely useless and worthless to him in the future, you will see at once that there can be no great damage in any treatment they gave to it, provided it was not unlawful. On the other hand, if it could have been saved by proper treatment and was negligently cut off, or was cut off without the consent of the plaintiff, then you may say that he has suffered by the act of the defendants. Now for any wrongful or careless act of the defendants, if they committed any such acts, and that is for you to say—by stating the question I am not assuming that they did commit

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them—for any wrongful or careless acts of the defendants upon the person of this plaintiff, which caused him injury, they are responsible. And in assessing damages, if you come to the question of damages, you should assess damages only on such injuries as these defendants are responsible for, excluding all damages and all pain that arise from the injury, which occurred before the defendants operated on him. You will see the importance of this, Mr. Foreman and gentlemen, because the defendants can only be responsible for such acts as they did, and they did not produce the injury. He came to them in a crippled condition, and you must consider whether or not they caused him any damage. If their treatment was beneficial, if it aided him, and was the best that could have been performed under the circumstances, you may consider that the damages are very slight, very small. On the other hand, if he has suffered and suffers, severely, from any wrongful or unauthorized act or careless act of the defendants in cutting off his arm, then they are responsible for such damages as they caused or gave.

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INDEX.

	PAGE.
Officers	3
Minutes of Annual Meeting	8
Registration	13
Minutes of House of Delegates	18
Report of Secretary	19
Report of Treasurer	23
Report of Councilors	25
Report of Committee on Medical Defense	30
Report of Delegates to Dartmouth Medical College	32
Report of Necrologist	33
Report of Committee on History of Medicine in New Hampshire	36
Report of Trustees	37
Report of Board of Medical Examiners	41
President's Address, John M. Gile	43
Surgery of the Stomach, John B. Deaver, M. D., LL. D.	54
Discussion by M. E. Kean	75
F. B. Lund	75
Frank Blaisdell	75
Address to Graduates of Dartmouth Medical School, F. E. Kittredge	80
Primary Carcinoma of the Appendix—Pray Prize Essay—George S. Graham	91
The Operative Treatment of Acute Hemorrhage from the Stomach, F. B. Lund	110
Legal Liability of Physicians to Patients, Marshall D. Cobleigh, Esq.	123
Discussion by E. O. Crossman	138
Judge James W. Remick	141
Hydrotherapy, J. B. Macdonald	145
Discussion by C. R. Walker	155
F. N. Rogers	156
H. W. N. Bennett	157
F. L. Gerald	158
Milk and Its Relation to Disease, H. W. N. Bennett	159

Digitized by Google

PAGE.

Discussion by Geo. C. Wilkins..... 170
Thomas M. Rotch..... 172
Tubercular Hip Disease, N. W. McMurphy..... 173
A Survey of Our Present Knowledge of Pancreatitis, John M. Gile..... 186
Empyema, E. E. Lake..... 192
The Development of Milk Laboratories, Prof. Thomas Morgan Rotch..... 195
Discussion by C. D. Howard, Ph. D..... 209
Shoe and Human Foot Through X-Ray, A. F. Wheat..... 213
Discussion by F. N. Rogers..... 220
J. G. W. Knowlton..... 221
Anna M. Littlefield..... 222
L. W. Flanders..... 223
C. R. Walker..... 224
H. W. N. Bennett..... 225
Responsibility of the General Practitioner and of the Specialist in the Prevention of Deafness, Francis P. Emerson..... 228
Discussion by L. W. Flanders..... 241
G. A. Weaver..... 243
The Hygienic and Physical Exercise Treatment of Cardiac and Neurasthenic Cases, John W. Bowler..... 247
Discussion by John C. O'Connor..... 257
A. E. Brownrigg..... 259
H. W. N. Bennett..... 260
Some Recent Items of Interest in Neurology, Albert E. Brownrigg..... 262
Discussion..... 267

Reports of County Societies:

Merrimack..... 272
Cheshire..... 273
Strafford..... 276
Hillsborough..... 277
Coös..... 278
Belknap..... 279
Grafton..... 279
Rockingham..... 280

Obituaries:

James Frank Brown..... 282
Frederic Russell Cummings..... 284

Digitized by Google

PAGE.

Manley W. Work..... 286
Gillis Stark..... 287
Edward M. Tucker..... 288
Milton S. Woodman..... 290
Henry A. Weymouth..... 292
James S. Brown..... 293
Ezra Mitchell..... 297
Henry A. Hildreth..... 299

List of Members..... 301

Charge of Judge Chamberlin in the McBride Case..... 321

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